

Sequence Listing
SEQUENCE LISTING

DT01 Rec'd PCT/PTC 24 JAN 2005

<110> Kogel, Karl-Heinz
Huckelhoven, Ralph
Trujillo, Marco

<120> Method for Obtaining a Pathogen Resistance in Plants

<130> 532622010500

<140> To be assigned

<141> 2005-01-24

<160> 24

<170> PatentIn Ver. 2.1

<210> 1

<211> 337

<212> DNA

<213> Hordeum vulgare

<220>

<221> CDS

<222> (2)..(337)

<223> coding for NADPH oxidase (fragment)

<400> 1

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  1           5           10           15
att gag atg cac aac tat ctc aca agt gtt tat gag gaa ggg gat gct 97
Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
          20           25           30
cgg tca gca ctc atc aca atg ctg caa gct ctc aac cat gcc aag aat 145
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
          35           40           45
ggt gtc gat gta gtg tct ggm act cga gtc cgg aca cat ttt gca aga 193
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
          50           55           60
cca aat ttt aag agg gtg ctg tct aag gta gcc gcc aaa cat cct tat 241
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
          65           70           75           80
gcc aag ata gga gtg ttc tat tgc gga gct cca gtt ctg gcg cag gaa 289
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
          85           90           95
cta agc aac ctt tgc cat gag ttc aat ggc aaa tgc acg aca aaa ttc 337
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<210> 2

<211> 112

<212> PRT

<213> Hordeum vulgare

<400> 2

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Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
          20           25           30
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
          35           40           45
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
          50           55           60
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
          65           70           75           80
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
          85           90           95
Leu Ser Asn Leu Cys His Glu Phe Asn Gly Lys Cys Thr Thr Lys Phe
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Sequence Listing

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<210> 3
<211> 2832
<212> DNA
<213> Oryza sativa
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<221> CDS
<222> (1)..(2829)
<223> coding for NADPH oxidase
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Thr Thr Pro Arg Ser Leu Ser Thr Gly Ser Ser Pro Arg Gly Ser Asp
20 25 30
gac cgg agc tcc gac gac ggg gag gag ctg gtc gag gtc acg ctc gac 144
Asp Arg Ser Ser Asp Asp Gly Glu Glu Leu Val Glu Val Thr Leu Asp
35 40 45
ctg cag gac gac gac acc att gtg ctt cgg agc gtc gag ccc gcg gcg 192
Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala
50 55 60
gcg gcg gcg gcg ggg gtg ggg gcg ggg gcg ggg gcg gcg tcg gcg gcg 240
Ala Ala Ala Ala Gly Val Gly Ala Gly Ala Gly Ala Ala Ser Ala Arg
65 70 75 80
ggg gag ctc acg ggt ggc ccg tcg tcg tcg tcg tcg cgg tcg agg tcg 288
Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser
85 90 95
ccg tcg atc cgg agg agc tcg tcg cac cgg ctg ctg cag ttc tcg cag 336
Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln
100 105 110
gag ctc aag gcg gag gcc atg gcc cgg gcg cgg cag ttc tcg cag gac 384
Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp
115 120 125
ctg acc aag cgg ttc ggc cgc agc cac agc cgc agc gaa gcg cag gcg 432
Leu Thr Lys Arg Phe Gly Arg Ser His Ser Arg Ser Glu Ala Gln Ala
130 135 140
ccg tcg ggc ctc gag tcc gcg ctc gcc gcc cgc gcc gcg cgg cgg cag 480
Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln
145 150 155 160
cgc gcg cag ctc gac cgc aca cgc tcc ggc gcc cac aag gcg ctc cgc 528
Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg
165 170 175
ggc ctc cgc ttc atc agc agc aac aag gcc aac aac gcc tgg atg gag 576
Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu
180 185 190
gtg cag gcc aac ttc gac cgc ctc gcc cgc gac ggc tac ctc tcc cgc 624
Val Gln Ala Asn Phe Asp Arg Leu Ala Arg Asp Gly Tyr Leu Ser Arg
195 200 205
tcc gac ttc gcc gaa tgc atc ggg atg acg gaa tcg aag gag ttc gcg 672
Ser Asp Phe Ala Glu Cys Ile Gly Met Thr Glu Ser Lys Glu Phe Ala
210 215 220
ctc gag ctg ttc gac acg ctg agc cgg cga cga cag atg aag gtg gac 720
Leu Glu Leu Phe Asp Thr Leu Ser Arg Arg Arg Gln Met Lys Val Asp
225 230 235 240
acg att aac aag gat gaa ctc cgc gag atc tgg cag cag atc acc gat 768
Thr Ile Asn Lys Asp Glu Leu Arg Glu Ile Trp Gln Gln Ile Thr Asp
245 250 255
aac agc ttc gac tcc cgt ctc caa atc ttc ttc gaa atg gtg gat aag 816
Asn Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Glu Met Val Asp Lys
260 265 270
aac gcg gac ggc cgg att acg gag gcg gag gtg aaa gag att att atg 864
Asn Ala Asp Gly Arg Ile Thr Glu Ala Glu Val Lys Glu Ile Ile Met
275 280 285

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Sequence Listing

275	280	285	
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290	295	300	
gag tac gcc gct ttg atc atg gag gag ctt gat cct gaa ggg ctc ggc			960
Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Gly Leu Gly			
305	310	315	
tac att gag cta tgg caa ttg gag aca ctt ctg ttg cag aaa gat acc			1008
Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Gln Lys Asp Thr			
325	330	335	
tat atg aac tat agt cag gcc ctt agt tac aca agc caa gca ctg agc			1056
Tyr Met Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser			
340	345	350	
cag aat ctt gca ggg cta agg aag aag agt tca atc cgc aaa ata agc			1104
Gln Asn Leu Ala Gly Leu Arg Lys Lys Ser Ser Ile Arg Lys Ile Ser			
355	360	365	
acc tct tta agc tac tat ttc gag gac aac tgg aaa cgt tta tgg gtg			1152
Thr Ser Leu Ser Tyr Tyr Phe Glu Asp Asn Trp Lys Arg Leu Trp Val			
370	375	380	
ctt gca ttg tgg att ggg ata atg gct gga ctg ttc acc tgg aaa ttc			1200
Leu Ala Leu Trp Ile Gly Ile Met Ala Gly Leu Phe Thr Trp Lys Phe			
385	390	395	
atg cag tat cgt aac cga tat gtc ttt gat gtg atg ggc tac tgt gtc			1248
Met Gln Tyr Arg Asn Arg Tyr Val Phe Asp Val Met Gly Tyr Cys Val			
405	410	415	
aca aca gca aaa gga gct gct gaa acc cta aag ctg aat atg gca att			1296
Thr Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Ile			
420	425	430	
atc ctc ctg cca gta tgc cgt aac acc att act tgg ttg cga agt aca			1344
Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr			
435	440	445	
agg gct gca cgg gca cta cct ttt gat gac aac atc aac ttc cac aag			1392
Arg Ala Ala Arg Ala Leu Pro Phe Asp Asp Asn Ile Asn Phe His Lys			
450	455	460	
act att gca gca gca att gtg gtt ggt ata atc ctc cat gca ggg aac			1440
Thr Ile Ala Ala Ala Ile Val Val Gly Ile Ile Leu His Ala Gly Asn			
465	470	475	
cac ctt gta tgc gat ttt cca cgg tta ata aaa tca tca gat gag aag			1488
His Leu Val Cys Asp Phe Pro Arg Leu Ile Lys Ser Ser Asp Glu Lys			
485	490	495	
tat gct cct ttg ggc cag tat ttt ggg gaa ata aag cca aca tat ttt			1536
Tyr Ala Pro Leu Gly Gln Tyr Phe Gly Glu Ile Lys Pro Thr Tyr Phe			
500	505	510	
aca ttg gtc aaa gga gtg gag ggc atc act ggg gta atc atg gtt gta			1584
Thr Leu Val Lys Gly Val Glu Gly Ile Thr Gly Val Ile Met Val Val			
515	520	525	
tgc atg ata att gct ttt act cta gca acc cgg tgg ttc cgc cgt agc			1632
Cys Met Ile Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser			
530	535	540	
ttg gtt aag ctt cca agg cca ttt gac aaa ctg act ggc ttc aat gcc			1680
Leu Val Lys Leu Pro Arg Pro Phe Asp Lys Leu Thr Gly Phe Asn Ala			
545	550	555	
ttt tgg tat tct cat cat ctg ttc atc att gtg tat atc gcg ctc att			1728
Phe Trp Tyr Ser His His Leu Phe Ile Ile Val Tyr Ile Ala Leu Ile			
565	570	575	
gtt cat gga gag tgt cta tac ctt att cat gtc tgg tac aga aga acg			1776
Val His Gly Glu Cys Leu Tyr Leu Ile His Val Trp Tyr Arg Arg Thr			
580	585	590	
aca tgg atg tat ctt tca gtg cct gtt tgc ttg tat gta ggg gag agg			1824
Thr Trp Met Tyr Leu Ser Val Pro Val Cys Leu Tyr Val Gly Glu Arg			
595	600	605	
att cta agg ttc ttc agg tct ggc agt tat tct gtc cgg cta ttg aag			1872
Ile Leu Arg Phe Phe Arg Ser Gly Ser Tyr Ser Val Arg Leu Leu Lys			

Sequence Listing

610	gtg gcc ata tat cca ggt aat gtt ttg aca ctg caa atg tcc aag cct	615	aat gtt ttg aca ctg caa atg tcc aag cct	620	caa atg tcc aag cct	1920
Val Ala Ile Tyr Pro	Gly Asn Val Leu Thr	Gln Met Ser Lys	Pro	Pro		
625	ccc acg ttc cgt tac aag agt gga caa tat atg ttt gtt caa tgt cca	630	aag agt gga caa tat atg ttt gtt caa tgt cca	635	ttt gtt caa tgt cca	1968
Pro Thr Phe Arg Tyr	Lys Ser Gly Gln Tyr Met Phe Val Gln Cys	Pro	Pro	Pro		
645	gca gtg tct ccc ttt gaa tgg cat ccc ttc tca att act tca gca cct	650	gaa tgg cat ccc ttc tca att act tca gca cct	655	gca cct	2016
Ala Val Ser	Pro Phe Glu Trp His	Pro Phe Ser Ile Thr	Pro	Pro		
660	ggg gat gac tac ctc agc att cat gtt cga caa ctt ggt gat tgg aca	665	gat gac tac ctc agc att cat gtt cga caa ctt ggt gat tgg aca	670	ggt gat tgg aca	2064
Gly Asp Asp Tyr Leu Ser Ile His Val Arg Gln Leu Gly Asp Trp Thr						
675	cga gaa ctc aag aga gta ttt gct gca gct tgt gag ccc cca gcg ggt	680	gaa ctc aag aga gta ttt gct gca gct tgt gag ccc cca gcg ggt	685	gag ccc cca gcg ggt	2112
Arg Glu Leu Lys Arg Val Phe	Ala Ala Ala Cys	Pro Pro Ala Gly				
690	ggt aaa agc ggc ctt ctt agg gca gat gag aca act aag aaa atc tta	695	aaa agc ggc ctt ctt agg gca gat gag aca act aag aaa atc tta	700	act aag aaa atc tta	2160
Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Thr Thr Lys Lys Ile Leu						
705	ccc aag ctt ctg att gat gga ccg tat ggt tct cct gct cag gat tac	710	aag ctt ctg att gat gga ccg tat ggt tct cct gct cag gat tac	715	ggt tct cct gct cag gat tac	2208
Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ser Pro Ala Gln Asp Tyr						
725	agc aag tat gat gtt tta tta ctt gtt gga tta gga att ggt gcg aca	730	aag tat gat gtt tta tta ctt gtt gga tta gga att ggt gcg aca	735	gga att ggt gcg aca	2256
Ser Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr						
740	ccc ttt att agc ata tta aaa gat ctt ctg aat aac atc atc aaa atg	745	ttt att agc ata tta aaa gat ctt ctg aat aac atc atc aaa atg	750	att agc ata tta aaa gat ctt ctg aat aac atc atc aaa atg	2304
Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Ile Lys Met						
755	gag gaa gag gag gat gct tct act gat ctt tat cca cca atg ggt cgg	760	gaa gag gag gat gct tct act gat ctt tat cca cca atg ggt cgg	765	gag gag gat gct tct act gat ctt tat cca cca atg ggt cgg	2352
Glu Glu Glu Glu Asp Ala Ser Thr Asp Leu Tyr Pro Pro Met Gly Arg						
770	aat aag cca cat gtt gat ctg ggc aca ctt atg acg att acc tca aga	775	aag cca cat gtt gat ctg ggc aca ctt atg acg att acc tca aga	780	cat gtt gat ctg ggc aca ctt atg acg att acc tca aga	2400
Asn Lys Pro His Val Asp Leu Gly Thr Leu Met Thr Ile Thr Ser Arg						
785	cca aag aag atc ttg aag acc aca aat gct tac ttt tac tgg gtg aca	790	aag aag acc aca aat gct tac ttt tac tgg gtg aca	795	aag aag acc aca aat gct tac ttt tac tgg gtg aca	2448
Pro Lys Lys Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr						
805	cgt gag caa ggc tct ttt gat tgg ttc aaa gga gtc atg aat gaa att	810	gag caa ggc tct ttt gat tgg ttc aaa gga gtc atg aat gaa att	815	caa ggc tct ttt gat tgg ttc aaa gga gtc atg aat gaa att	2496
Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Ile						
820	gct gac ttg gat caa agg aat atc att gag atg cac aac tac cta aca	825	gac ttg gat caa agg aat atc att gag atg cac aac tac cta aca	830	ttg gat caa agg aat atc att gag atg cac aac tac cta aca	2544
Ala Asp Leu Asp Gln Arg Asn Ile Ile Glu Met His Asn Tyr Leu Thr						
835	agc gtc tat gag gag ggg gat gcc agg tca gca ctc atc acc atg ctc	840	gtc tat gag gag ggg gat gcc agg tca gca ctc atc acc atg ctc	845	tat gag gag ggg gat gcc agg tca gca ctc atc acc atg ctc	2592
Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu						
850	caa gct ctg aac cat gcc aag aat gga gtt gat att gtc tct ggg aca	855	gct ctg aac cat gcc aag aat gga gtt gat att gtc tct ggg aca	860	ctg aac cat gcc aag aat gga gtt gat att gtc tct ggg aca	2640
Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr						
865	aaa gtc cgg aca cat ttt gca cga cca aat tgg aga aag gtc ctt tct	870	gtc cgg aca cat ttt gca cga cca aat tgg aga aag gtc ctt tct	875	aca cat ttt gca cga cca aat tgg aga aag gtc ctt tct	2688
Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser						
885	aaa att tcc tcc aag cat cca tat gcc aaa ata ggt gta ttc tac tgt	890	att tcc aag cat cca tat gcc aaa ata ggt gta ttc tac tgt	895	tcc aag cat cca tat gcc aaa ata ggt gta ttc tac tgt	2736
Lys Ile Ser Ser Lys His Pro Tyr Ala Lys Ile Gly Val Phe Tyr Cys						
900	gga gct cca gtc ctg gca caa gaa cta agc aaa ctt tgc cat gaa ttc	905	gct cca gtc ctg gca caa gaa cta agc aaa ctt tgc cat gaa ttc	910	cca gtc ctg gca caa gaa cta agc aaa ctt tgc cat gaa ttc	2784
Gly Ala Pro Val Leu Ala Gln Glu Leu Ser Lys Leu Cys His Glu Phe						
915	aac ggg aaa tgc aca acg aag ttc gaa ttc cat aag gag cat ttc tga	920	ggg aaa tgc aca acg aag ttc gaa ttc cat aag gag cat ttc tga	925	aaa tgc aca acg aag ttc gaa ttc cat aag gag cat ttc tga	2832
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<210> 4
<211> 943

Sequence Listing

<212> PRT

<213> Oryza sativa

<400> 4

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      20      25      30
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      35      40      45
Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala
      50      55      60
Ala Ala Ala Ala Gly Val Gly Ala Gly Ala Gly Ala Ala Ser Ala Arg
      65      70      75      80
Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser
      85      90      95
Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln
      100      105      110
Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp
      115      120      125
Leu Thr Lys Arg Phe Gly Arg Ser His Ser Arg Ser Glu Ala Gln Ala
      130      135      140
Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln
      145      150      155      160
Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg
      165      170      175
Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu
      180      185      190
Val Gln Ala Asn Phe Asp Arg Leu Ala Arg Asp Gly Tyr Leu Ser Arg
      195      200      205
Ser Asp Phe Ala Glu Cys Ile Gly Met Thr Glu Ser Lys Glu Phe Ala
      210      215      220
Leu Glu Leu Phe Asp Thr Leu Ser Arg Arg Arg Gln Met Lys Val Asp
      225      230      235      240
Thr Ile Asn Lys Asp Glu Leu Arg Glu Ile Trp Gln Gln Ile Thr Asp
      245      250      255
Asn Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Glu Met Val Asp Lys
      260      265      270
Asn Ala Asp Gly Arg Ile Thr Glu Ala Glu Val Lys Glu Ile Ile Met
      275      280      285
Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu
      290      295      300
Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Gly Leu Gly
      305      310      315      320
Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr
      325      330      335
Tyr Met Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser
      340      345      350
Gln Asn Leu Ala Gly Leu Arg Lys Lys Ser Ser Ile Arg Lys Ile Ser
      355      360      365
Thr Ser Leu Ser Tyr Tyr Phe Glu Asp Asn Trp Lys Arg Leu Trp Val
      370      375      380
Leu Ala Leu Trp Ile Gly Ile Met Ala Gly Leu Phe Thr Trp Lys Phe
      385      390      395      400
Met Gln Tyr Arg Asn Arg Tyr Val Phe Asp Val Met Gly Tyr Cys Val
      405      410      415
Thr Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Ile
      420      425      430
Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr
      435      440      445
Arg Ala Ala Arg Ala Leu Pro Phe Asp Asp Asn Ile Asn Phe His Lys
      450      455      460
Thr Ile Ala Ala Ala Ile Val Val Gly Ile Ile Leu His Ala Gly Asn
      465      470      475      480

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Sequence Listing

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His Leu Val Cys Asp Phe Pro Arg Leu Ile Lys Ser Ser Asp Glu Lys
      485      490
Tyr Ala Pro Leu Gly Gln Tyr Phe Gly Glu Ile Lys Pro Thr Tyr Phe
      500      505      510
Thr Leu Val Lys Gly Val Glu Gly Ile Thr Gly Val Ile Met Val Val
      515      520      525
Cys Met Ile Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser
      530      535      540
Leu Val Lys Leu Pro Arg Pro Phe Asp Lys Leu Thr Gly Phe Asn Ala
      545      550      555      560
Phe Trp Tyr Ser His His Leu Phe Ile Ile Val Tyr Ile Ala Leu Ile
      565      570      575
Val His Gly Glu Cys Leu Tyr Leu Ile His Val Trp Tyr Arg Arg Thr
      580      585      590
Thr Trp Met Tyr Leu Ser Val Pro Val Cys Leu Tyr Val Gly Glu Arg
      595      600      605
Ile Leu Arg Phe Phe Arg Ser Gly Ser Tyr Ser Val Arg Leu Leu Lys
      610      615      620
Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro
      625      630      635      640
Pro Thr Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro
      645      650      655      660
Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro
      665      670      675
Gly Asp Asp Tyr Leu Ser Ile His Val Arg Gln Leu Gly Asp Trp Thr
      680      685      690
Arg Glu Leu Lys Arg Val Phe Ala Ala Ala Cys Glu Pro Pro Ala Gly
      695      700      705
Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Thr Thr Lys Lys Ile Leu
      710      715      720
Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ser Pro Ala Gln Asp Tyr
      725      730      735
Ser Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
      740      745      750
Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Ile Lys Met
      755      760      765
Glu Glu Glu Glu Asp Ala Ser Thr Asp Leu Tyr Pro Pro Met Gly Arg
      770      775      780
Asn Lys Pro His Val Asp Leu Gly Thr Leu Met Thr Ile Thr Ser Arg
      785      790      795      800
Pro Lys Lys Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr
      805      810      815
Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Ile
      820      825      830
Ala Asp Leu Asp Gln Arg Asn Ile Ile Glu Met His Asn Tyr Leu Thr
      835      840      845
Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu
      850      855      860
Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr
      865      870      875      880
Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser
      885      890      895
Lys Ile Ser Ser Lys His Pro Tyr Ala Lys Ile Gly Val Phe Tyr Cys
      900      905      910
Gly Ala Pro Val Leu Ala Gln Glu Leu Ser Lys Leu Cys His Glu Phe
      915      920      925
Asn Gly Lys Cys Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
      930      935      940

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<210> 5

<211> 2889

<212> DNA

<213> Nicotiana tabacum

Sequence Listing

<220>

<221> CDS

<222> (1)..(2886)

<223> coding for NADPH oxidase

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20 25 30	
ggc tat aat tcc ggt ttt gct tcc gag gag ttt gtt gaa gtc acg ctt	144
Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu	
35 40 45	
gat ctt cag gat gat gat acc att att cta cgg agc gtt gaa ccg gct	192
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala	
50 55 60	
act gtg att aac att gac gct cct gat ctt ccc gcc gga gtc ggt att	240
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile	
65 70 75 80	
tcc gga gtt tca att gaa act ccg acg tca gca tcg gtg tcg gaa tct	288
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser	
85 90 95	
cga tcg ccg acg atc cgc cgg agt tca tct agt aaa ctt cgt cag ttt	336
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Ser Lys Leu Arg Gln Phe	
100 105 110	
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Ser Gln Glu Leu Lys Ala Glu Val Ala Lys Ala Arg Gln Phe Ser	
115 120 125	
caa gag ctg aag gcg gag tta agg aga ttc tca tgg agc cat ggg cat	432
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His	
130 135 140	
gcg tct cgc gcg ttt tcg ccc tcg tcg ttt ttt caa aac gcc gtc gtt	480
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Gln Asn Ala Val Val	
145 150 155 160	
gga aca ggt aac ggc gtg gac tcg gct tta gcg gca cgt gca tta cgt	528
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg	
165 170 175	
cgg caa cgc gcg cag ctt gat cgg act cgt tcc agc gcc cat aga gct	576
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala	
180 185 190	
ctt cgt aga ctc aaa ttc att agc aat aac aaa acc aat gga tgg aat	624
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn	
195 200 205	
gaa gtt gaa aac aat ttc tca aag ctc gct aaa gac ggt tat ctt tac	672
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr	
210 215 220	
cgt tcc gat ttc gca caa tgc ata ggt atg aag gat tcg aag gaa ttt	720
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe	
225 230 235 240	
gca ttg gaa tta ttt gat gct ttg agt aga aga aga tta aag gtt	768
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val	
245 250 255	
gat aaa att agc aag gag gaa ttg tat gag tac tgg tct caa atc acc	816
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr	
260 265 270	
gat cag agt ttc gat tct cgg ctt cag atc tcc ttc gac atg gtg gac	864
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp	
275 280 285	
aag aat gaa gat ggt cga att gct gaa gag gaa gta aaa gag atc atc	912
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile	
290 295 300	
atg cta agt gca tct gca aac aag tta tca aga tta aaa gaa caa gca	960

Sequence Listing

Met	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ser	Arg	Leu	Lys	Glu	Gln	Ala		
305					310					315					320		
gag	gag	tat	gca	gct	tta	atc	atg	gaa	gaa	tta	gat	cct	gaa	aga	ctc	1008	
Glu	Glu	Tyr	Ala	Ala	Leu	Ile	Met	Glu	Glu	Leu	Asp	Pro	Glu	Arg	Leu		
				325					330					335			
ggc	tac	att	gag	cta	tgg	cag	ctg	gaa	aca	ctt	ctc	ctc	caa	aag	gac	1056	
Gly	Tyr	Ile	Glu	Leu	Trp	Gln	Leu	Glu	Thr	Leu	Leu	Leu	Gln	Lys	Asp		
			340					345					350				
act	tac	ctc	aac	tac	agt	caa	gca	cta	agt	tac	acg	agc	caa	gcc	ttg	1104	
Thr	Tyr	Leu	Asn	Tyr	Ser	Gln	Ala	Leu	Ser	Tyr	Thr	Ser	Gln	Ala	Leu		
			355				360					365					
agc	caa	aac	ctt	cac	gga	tta	agg	aag	aaa	agc	cca	ata	aaa	aga	atg	1152	
Ser	Gln	Asn	Leu	His	Gly	Leu	Arg	Lys	Lys	Ser	Pro	Ile	Lys	Arg	Met		
			370		375						380						
agc	aca	aaa	ctt	gtc	tat	tca	ttg	caa	gaa	aac	tgg	aag	aga	att	tgg	1200	
Ser	Thr	Lys	Leu	Val	Tyr	Ser	Leu	Gln	Glu	Asn	Trp	Lys	Arg	Ile	Trp		
385					390					395					400		
gtt	ctc	act	tta	tgg	att	ttg	ata	atg	att	ggg	ctt	ttt	ctt	tgg	aag	1248	
Val	Leu	Thr	Leu	Trp	Ile	Leu	Ile	Met	Ile	Gly	Leu	Phe	Leu	Trp	Lys		
			405					410						415			
ttc	tat	cag	tac	aaa	aac	aag	agt	gca	ttc	cgt	gtc	atg	ggg	tat	tgc	1296	
Phe	Tyr	Gln	Tyr	Lys	Asn	Lys	Ser	Ala	Phe	Arg	Val	Met	Gly	Tyr	Cys		
			420					425					430				
ctt	gtc	acg	gct	aag	ggc	gct	gct	gag	act	ctc	aag	ttc	aac	atg	gct	1344	
Leu	Val	Thr	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala		
			435			440						445					
ctt	ata	tta	ttg	cca	gta	tgc	aga	aac	act	att	aca	tgg	ctc	agg	tcc	1392	
Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Ser		
			450			455					460						
acc	aag	ttg	agc	cat	ttt	gta	ccc	ttt	gac	gac	aac	atc	aac	ttt	cac	1440	
Thr	Lys	Leu	Ser	His	Phe	Val	Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His		
465					470				475					480			
aag	act	gtc	gct	gca	gcc	att	gtc	act	ggg	atc	ata	ctc	cat	gct	ggg	1488	
Lys	Thr	Val	Ala	Ala	Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly		
			485					490						495			
aac	cat	ctt	gta	tgt	gat	ttc	cca	agg	ctt	ata	cat	gca	gat	gat	caa	1536	
Asn	His	Leu	Val	Cys	Asp	Phe	Pro	Arg	Leu	Ile	His	Ala	Asp	Asp	Gln		
			500					505				510					
gat	tat	caa	agt	ttt	ttg	tcg	aat	gat	ttt	ggc	caa	agt	aag	cct	gga	1584	
Asp	Tyr	Gln	Ser	Phe	Leu	Ser	Asn	Asp	Phe	Gly	Gln	Ser	Lys	Pro	Gly		
			515				520					525					
tac	ata	gac	ctt	gtt	aaa	gga	gtt	gag	ggg	gtg	acg	gga	ata	ata	atg	1632	
Tyr	Ile	Asp	Leu	Val	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	Ile	Met		
			530			535				540							
gta	atc	ctt	atg	gcc	att	gct	ttc	act	ctt	gct	aca	cga	tgg	ttt	aga	1680	
Val	Ile	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg		
545					550					555					560		
cgg	agc	ctc	att	aag	ttg	ccc	aaa	cct	ttt	gat	aga	ctc	act	ggc	ttc	1728	
Arg	Ser	Leu	Ile	Lys	Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe		
			565					570						575			
aat	gca	ttc	tgg	tat	tca	cac	cac	ctt	ctt	gtc	att	gtc	tac	atc	cta	1776	
Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Leu	Val	Ile	Val	Tyr	Ile	Leu		
			580					585				590					
ctg	atc	atc	cat	ggc	acg	ttc	ctc	ttc	ctt	gtg	cat	aaa	tgg	tac	tcc	1824	
Leu	Ile	Ile	His	Gly	Thr	Phe	Leu	Phe	Leu	Val	His	Lys	Trp	Tyr	Ser		
			595			600					605						
aag	acg	acg	tgg	atg	tat	cta	gca	gtt	cct	gtg	ctt	ctc	tac	gca	ggg	1872	
Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ala	Val	Pro	Val	Leu	Leu	Tyr	Ala	Gly		
			610			615				620							
gaa	aga	act	ctt	aga	ttc	ttc	cgg	tca	ggc	ttg	tac	act	gtc	cgg	ctt	1920	
Glu	Arg	Thr	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Thr	Val	Arg	Leu		
625					630				635						640		
ctg	aaa	gta	gca	ata	tat	cct	gga	aat	gtc	ctc	act	cta	caa	atg	tct	1968	

Sequence Listing

Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	
aag	cct	cct	caa	ttt	cga	tac	aaa	agt	gga	caa	tat	atg	ttt	gtc	cag	2016
Lys	Pro	Pro	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	
			660					665					670			
tgt	cca	gct	gtt	tct	cca	ttc	gag	tgg	cat	cca	ttt	tcc	att	act	tca	2064
Cys	Pro	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	
		675					680					685				
gct	cct	ggg	gat	gac	tac	ttg	agc	att	cac	atc	cgg	caa	ctt	ggt	gac	2112
Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp	
	690					695					700					
tgg	act	caa	gaa	ctc	aag	cgg	gtc	ttt	tct	gag	gct	tgc	gag	cgg	cca	2160
Trp	Thr	Gln	Glu	Leu	Lys	Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	Arg	Pro	
705					710					715					720	
gag	gct	gga	aag	agt	ggc	ctg	ctc	aga	gct	gac	gaa	aac	act	aag	aaa	2208
Glu	Ala	Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	Lys	Lys	
				725					730					735		
agt	ttg	cca	aag	cta	tta	ata	gat	gga	cct	tac	gga	gct	cca	gca	caa	2256
Ser	Leu	Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	
			740					745					750			
gat	tac	cga	aaa	tat	gat	gtc	ttg	ctg	ctt	gtt	ggt	ctt	ggc	att	gga	2304
Asp	Tyr	Arg	Lys	Tyr	Asp	Val	Leu	Leu	Val	Gly	Leu	Gly	Gly	Ile	Gly	
		755					760					765				
gca	acg	ccg	ttc	ata	agt	atc	ctg	aaa	gac	ttg	ctc	gtt	aac	atc	gtg	2352
Ala	Thr	Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Val	Asn	Ile	Val	
	770					775				780						
aaa	atg	gag	gag	caa	gca	gat	tta	gcc	tca	gat	ttc	agt	ggg	aac	tca	2400
Lys	Met	Glu	Glu	Gln	Ala	Asp	Leu	Ala	Ser	Asp	Phe	Ser	Gly	Asn	Ser	
785					790					795					800	
gac	atg	agc	gtt	gcg	aca	agt	gaa	caa	cca	gct	ctc	aac	aag	att	tct	2448
Asp	Met	Ser	Val	Ala	Thr	Ser	Glu	Gln	Pro	Ala	Leu	Asn	Lys	Ile	Ser	
				805					810					815		
ctg	aaa	agg	aga	aag	agc	act	cta	aga	acc	aca	aat	gca	tat	ttt	tat	2496
Leu	Lys	Arg	Arg	Lys	Ser	Thr	Leu	Arg	Thr	Thr	Asn	Ala	Tyr	Phe	Tyr	
			820					825					830			
tgg	gtg	acc	cgg	gag	caa	gga	tca	ttt	gat	tgg	ttc	aaa	ggc	gtt	atg	2544
Trp	Val	Thr	Arg	Glu	Gln	Gly	Ser	Phe	Asp	Trp	Phe	Lys	Gly	Val	Met	
		835					840					845				
aac	gaa	gtg	gct	gaa	ctt	gat	caa	agg	ggg	gtc	atc	gag	atg	cat	aac	2592
Asn	Glu	Val	Ala	Glu	Leu	Asp	Gln	Arg	Gly	Val	Ile	Glu	Met	His	Asn	
	850					855					860					
tac	ttg	acg	agt	gtt	tat	gag	gaa	ggg	gat	gct	cgt	tca	gct	ctc	att	2640
Tyr	Leu	Thr	Ser	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	
865					870					875					880	
acc	atg	gtc	cag	gca	ctt	aac	cat	gct	aag	aat	ggg	gtt	gat	att	gta	2688
Thr	Met	Val	Gln	Ala	Leu	Asn	His	Ala	Lys	Asn	Gly	Val	Asp	Ile	Val	
				885					890					895		
tca	ggc	acc	agg	gtg	agg	aca	cat	ttt	gct	agg	cca	aat	tgg	aag	aaa	2736
Ser	Gly	Thr	Arg	Val	Arg	Thr	His	Phe	Ala	Arg	Pro	Asn	Trp	Lys	Lys	
			900					905					910			
gta	ttt	tcc	aag	acc	tta	acc	aag	cat	gca	aat	gca	aga	ata	ggg	gtt	2784
Val	Phe	Ser	Lys	Thr	Leu	Thr	Lys	His	Ala	Asn	Ala	Arg	Ile	Gly	Val	
		915					920					925				
ttc	tac	tgt	ggt	gca	ccc	gta	tta	gca	aaa	gaa	ctc	agc	aaa	ctc	tgc	2832
Phe	Tyr	Cys	Gly	Ala	Pro	Val	Leu	Ala	Lys	Glu	Leu	Ser	Lys	Leu	Cys	
		930				935					940					
aaa	gag	tat	aat	caa	aag	ggt	gca	aca	aag	ttc	gag	ttt	cac	aaa	gaa	2880
Lys	Glu	Tyr	Asn	Gln	Lys	Gly	Ala	Thr	Lys	Phe	Glu	Phe	His	Lys	Glu	
945					950					955					960	
cat	ttt	tag														2889
His	Phe															
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<211>	962															

Sequence Listing

<212> PRT

<213> Nicotiana tabacum

<400> 6

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Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu
      35      40      45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
      50      55      60
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile
      65      70      75      80
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser
      85      90      95
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Lys Leu Arg Gln Phe
      100      105      110
Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser
      115      120      125
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His
      130      135      140
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Phe Gln Asn Ala Val Val
      145      150      155      160
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg
      165      170      175
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala
      180      185      190
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn
      195      200      205
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr
      210      215      220
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe
      225      230      235      240
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val
      245      250      255
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr
      260      265      270
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp
      275      280      285
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile
      290      295      300
Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala
      305      310      315      320
Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg Leu
      325      330      335
Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp
      340      345      350
Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu
      355      360      365
Ser Gln Asn Leu His Gly Leu Arg Lys Lys Ser Pro Ile Lys Arg Met
      370      375      380
Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp
      385      390      395      400
Val Leu Thr Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu Trp Lys
      405      410      415
Phe Tyr Gln Tyr Lys Asn Lys Ser Ala Phe Arg Val Met Gly Tyr Cys
      420      425      430
Leu Val Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn Met Ala
      435      440      445
Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser
      450      455      460
Thr Lys Leu Ser His Phe Val Pro Phe Asp Asp Asn Ile Asn Phe His
      465      470      475      480

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Sequence Listing

Lys Thr Val Ala Ala Ala Ile Val Thr Gly Ile Ile Leu His Ala Gly
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 Asn His Leu Val Cys Asp Phe Pro Arg Leu Ile His Ala Asp Asp Gln
 500 505 510
 Asp Tyr Gln Ser Phe Leu Ser Asn Asp Phe Gly Gln Ser Lys Pro Gly
 515 520 525
 Tyr Ile Asp Leu Val Lys Gly Val Glu Gly Val Thr Gly Ile Ile Met
 530 535 540
 Val Ile Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg
 545 550 555 560
 Arg Ser Leu Ile Lys Leu Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe
 565 570 575
 Asn Ala Phe Trp Tyr Ser His His Leu Leu Val Ile Val Tyr Ile Leu
 580 585 590
 Leu Ile Ile His Gly Thr Phe Leu Phe Leu Val His Lys Trp Tyr Ser
 595 600 605
 Lys Thr Thr Trp Met Tyr Leu Ala Val Pro Val Leu Leu Tyr Ala Gly
 610 615 620
 Glu Arg Thr Leu Arg Phe Phe Arg Ser Gly Leu Tyr Thr Val Arg Leu
 625 630 635 640
 Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser
 645 650 655
 Lys Pro Pro Gln Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln
 660 665 670
 Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser
 675 680 685
 Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp
 690 695 700
 Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Arg Pro
 705 710 715 720
 Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Lys
 725 730 735
 Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
 740 745 750
 Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly
 755 760 765
 Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Val Asn Ile Val
 770 775 780
 Lys Met Glu Glu Gln Ala Asp Leu Ala Ser Asp Phe Ser Gly Asn Ser
 785 790 795 800
 Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser
 805 810 815
 Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr
 820 825 830
 Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met
 835 840 845
 Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn
 850 855 860
 Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile
 865 870 875 880
 Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val
 885 890 895
 Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys
 900 905 910
 Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val
 915 920 925
 Phe Tyr Cys Gly Ala Pro Val Leu Ala Lys Glu Leu Ser Lys Leu Cys
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 945 950 955 960
 His Phe

Sequence Listing

<210> 7
 <211> 3733
 <212> DNA
 <213> Solanum tuberosum
 <220>
 <221> CDS
 <222> (92)..(2980)
 <223> coding for NADPH oxidase
 <400> 7

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tatttatitta ttgtgctttg atttgggaca a atg agg ggt tta cct ggg cat 112
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                               Met Arg Gly Leu Pro Gly His

gaa cgc cgg tgg acg tcg gat acg gta tct tcc ggc aag gat tta agt 160
Glu Arg Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser
                               10      15      20

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Gly Glu Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala
                               25      30      35

tcc gag gag ttt gtt gaa gtt ata ctt gat ctt cag gat gat gat acg 256
Ser Glu Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr
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att att cta cgg agc gtt gaa ccg gct act gta atc aac att gat gct 304
Ile Ile Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Ala
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tct gat cct gct acc gga gtc ggt att ggt gga gta tcg att gaa act 352
Ser Asp Pro Ala Thr Gly Val Gly Ile Gly Gly Val Ser Ile Glu Thr
                               75      80      85

ccg gcg tcg ctg act tcg acg tcg gga act cga tcg ccg acg atg cgt 400
Pro Ala Ser Leu Thr Ser Thr Ser Gly Thr Arg Ser Pro Thr Met Arg
                               90      95      100

cgg agt aca tcg aat aaa tta cgt cag ttt tca cag gag ttg aaa gct 448
Arg Ser Thr Ser Asn Lys Leu Arg Gln Phe Ser Gln Glu Leu Lys Ala
                               105      110      115

gag gct gtc gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag 496
Glu Ala Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu
                               120      125      130      135

cta agg aga ttc tca tgg agc cat gga cat gcg tct cgc act ttt tcg 544
Leu Arg Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Thr Phe Ser
                               140      145      150

ccg gcg tcg ttt ttc caa aac gcc gtc gtc ggt aca ggc aac ggt gta 592
Pro Ala Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val
                               155      160      165

gat tcg gct tta gca gct cga gca tta cga cgg cag cgc gct cag ctc 640
Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg Arg Gln Arg Ala Gln Leu
                               170      175      180

gat cgg act cgt tcc agc gct cac aag gct ctt cgt gga ctc aaa ttc 688
Asp Arg Thr Arg Ser Ser Ala His Lys Ala Leu Arg Gly Leu Lys Phe
                               185      190      195

atc agc aat aac aaa act aac gga tgg aat gaa gtt gaa aac aat ttt 736
Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn Glu Val Glu Asn Asn Phe
                               200      205      210      215

gct aag ctc gct aaa gac ggt tac ctt tat cgc tcc gat ttc gca caa 784
Ala Lys Leu Ala Lys Asp Gly Tyr Leu Tyr Arg Ser Asp Phe Ala Gln
                               220      225      230

tgc atc ggt atg aag gat tca aag gaa ttt gca ttg gaa ttg ttt gat 832
Cys Ile Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp
                               235      240      245

gct ttg agt aga aga aga aga ttg aag gtt gat aag att agc aaa gag 880
Ala Leu Ser Arg Arg Arg Arg Leu Lys Val Asp Lys Ile Ser Lys Glu
                               250      255      260

gaa ttg tat gag tat tgg tct caa atc acc gat cag agt ttc gat tct 928
Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr Asp Gln Ser Phe Asp Ser

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Sequence Listing

265	270	275	976
cgg ctt cag atc ttc ttc gac atg gtg gac aag aat gaa gat ggt cga	Arg Leu Gln Ile Phe Phe Asp Met Val Asp Lys Asn Glu Asp Gly Arg		
280	285	290	1024
att ggt gaa gaa gaa gta aaa gag atc atc atg cta agt gcc tct gca	Ile Gly Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala		
300	305	310	1072
aac aaa tta tca aga tta aaa gaa caa gca gag gag tat gca gct ctg	Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu		
315	320	325	1120
atc atg gaa gaa tta gat cct gaa aga ctt ggc tac att gag cta tgg	Ile Met Glu Glu Leu Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu Trp		
330	335	340	1168
cag ctg gaa acg ctt ctc ctc caa aag gac act tac ctc aac tac agt	Gln Leu Glu Thr Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser		
345	350	355	1216
caa gca cta agc tac aca agc caa gct ttg agc caa aac ctg caa ggg	Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln Gly		
360	365	370	1264
ttg agg aag aga agc cca ata aga aga atg agc aca aaa ctt gtc tat	Leu Arg Lys Arg Ser Pro Ile Arg Arg Met Ser Thr Lys Leu Val Tyr		
380	385	390	1312
tca ctg caa gag aat tgg aag aga att tgg gtt ctg gtc ttg tgg att	Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Val Leu Trp Ile		
395	400	405	1360
ttg ata atg att gga ctt ttt ctt tgg aag ttc tat ctg tac aaa cag	Leu Ile Met Ile Gly Leu Phe Leu Trp Lys Phe Tyr Leu Tyr Lys Gln		
410	415	420	1408
aaa agt gca ttt caa gtt atg ggt tat tgc ctt cta aca gct aag ggt	Lys Ser Ala Phe Gln Val Met Gly Tyr Cys Leu Leu Thr Ala Lys Gly		
425	430	435	1456
gct gct gag act cta aag ttc aac atg gct ttg ata ttg ttg cca gtt	Ala Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu Leu Pro Val		
440	445	450	1504
tgc agg aac acc att aca ttc ctc agg tct act aaa ttg agt tgt ttt	Cys Arg Asn Thr Ile Thr Phe Leu Arg Ser Thr Lys Leu Ser Cys Phe		
460	465	470	1552
gta ccc ttt gat gac aac atc aac ttc cac aag act gtt gct gca gcc	Val Pro Phe Asp Asp Asn Ile Asn Phe His Lys Thr Val Ala Ala Ala		
475	480	485	1600
att gtt act ggt atc ata ctc cat gcc ggt aat cat ctt gta tgt gat	Ile Val Thr Gly Ile Ile Leu His Ala Gly Asn His Leu Val Cys Asp		
490	495	500	1648
ttc cca aag ctt ata cat gca aat aat acg aat tat cag aaa tat ttg	Phe Pro Lys Leu Ile His Ala Asn Asn Thr Asn Tyr Gln Lys Tyr Leu		
505	510	515	1696
gtg aat gat ttt ggc cca agc cag cct cag tac ata gat ctt gtt aaa	Val Asn Asp Phe Gly Pro Ser Gln Pro Gln Tyr Ile Asp Leu Val Lys		
520	525	530	1744
gga gtg gag ggt gtg aca gga ata ata atg gta atc ctc atg gcc att	Gly Val Glu Gly Val Thr Gly Ile Ile Met Val Ile Leu Met Ala Ile		
540	545	550	1792
gct ttc act ctt gca acg cga tgg ttt agg cgg agc ctc att aag ttt	Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser Leu Ile Lys Phe		
555	560	565	1840
ccc aaa cct ttt gat aga ctc act ggt ttc aat gcg ttc tgg tac tcg	Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr Ser		
570	575	580	1888
cac cac ctt ctc atc att gtc tac atc gta ctg atc atc cat ggc aca	His His Leu Leu Ile Ile Val Tyr Ile Val Leu Ile Ile His Gly Thr		
585	590	595	1936
ttc ctc tac ctt gtg cat aac tgg tac tcc aaa acg aca tgg atg tat	Phe Leu Tyr Leu Val His Asn Trp Tyr Ser Lys Thr Trp Met Tyr		

Sequence Listing

600	cta	gca	gtt	cct	gta	605	ctt	ctc	tac	gca	610	gaa	aga	act	ctt	aga	615		
	Leu	Ala	Val	Pro	Val		Leu	Leu	Tyr	Ala		Glu	Arg	Thr	Leu	Arg		1984	
					620						625					630			
	ttc	cga	tca	ggc	tta	tat	aca	gtc	cgg	ctt	cta	aaa	gta	gca	ata	tat		2032	
	Phe	Arg	Ser	Gly	Leu	Tyr	Thr	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr			
				635					640					645					
	cct	gga	aat	gtc	ctt	act	ctg	caa	atg	tct	aag	cct	ccg	caa	ttt	cga		2080	
	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro	Pro	Gln	Phe	Arg			
			650					655					660						
	tac	aag	agt	gga	caa	tat	atg	ttt	gtc	cag	tgt	cca	gct	ggt	tct	cca		2128	
	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro	Ala	Val	Ser	Pro			
		665					670				675								
	ttc	gag	tgg	cat	cca	ttt	tcc	att	act	tca	gct	cct	ggg	gat	gac	tac		2176	
	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr			
	680					685					690					695			
	ttg	agc	att	cat	atc	cga	caa	ctt	ggt	gac	tgg	act	caa	gaa	ctc	aag		2224	
	Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp	Trp	Thr	Gln	Glu	Leu	Lys			
					700				705					710					
	cgg	gtg	ttt	tcc	gag	gct	tgc	gag	cag	cca	gag	gct	gga	aag	agt	ggc		2272	
	Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	Gln	Pro	Glu	Ala	Gly	Lys	Ser	Gly			
				715				720					725						
	ctg	ctc	aga	gct	gac	gaa	aac	acc	aaa	aca	agt	ttg	cca	aag	cta	ttg		2320	
	Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	Lys	Thr	Ser	Leu	Pro	Lys	Leu	Leu			
			730				735					740							
	ata	gat	gga	cct	tat	gga	gct	cca	gca	caa	gat	tac	cga	aag	tat	gat		2368	
	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	Asp			
		745				750					755								
	gtc	tta	ctg	ctt	gtt	ggt	ctt	ggc	att	gga	gca	act	ccc	ttt	ata	agt		2416	
	Val	Leu	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Phe	Ile	Ser			
	760				765					770					775				
	atc	ctg	aaa	gac	ttg	ctc	aaa	aac	atc	gtc	aca	atg	gag	gag	caa	gca		2464	
	Ile	Leu	Lys	Asp	Leu	Leu	Lys	Asn	Ile	Val	Thr	Met	Glu	Glu	Gln	Ala			
					780				785						790				
	gat	tta	gtc	tcg	gat	ttt	tca	ggg	aac	tca	gac	atg	agc	gct	gca	aca		2512	
	Asp	Leu	Val	Ser	Asp	Phe	Ser	Gly	Asn	Ser	Asp	Met	Ser	Ala	Ala	Thr			
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	agt	gaa	caa	cca	gct	ctc	aac	aag	att	tct	cca	aaa	aag	aga	aag	agt		2560	
	Ser	Glu	Gln	Pro	Ala	Leu	Asn	Lys	Ile	Ser	Pro	Lys	Lys	Arg	Lys	Ser			
			810				815					820							
	act	cta	aaa	acc	aca	aat	gca	tat	ttt	tat	tgg	gtg	acc	cgg	gag	caa		2608	
	Thr	Leu	Lys	Thr	Thr	Asn	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln			
		825				830					835								
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	Asp	Gln	Arg	Gly	Val	Ile	Glu	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	Tyr			
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	gag	gaa	ggg	gat	gca	cgt	tca	gct	ctc	att	acc	atg	gtc	cag	gcg	ctt		2752	
	Glu	Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Thr	Met	Val	Gln	Ala	Leu			
				875				880					885						
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	Thr	His	Phe	Ala	Arg	Pro	Asn	Trp	Arg	Lys	Val	Phe	Ser	Lys	Thr	Leu			
		905				910					915								
	acc	aag	cat	gca	aat	gca	aga	ata	gga	gtt	ttc	tac	tgc	ggt	gca	ccc		2896	
	Thr	Lys	His	Ala	Asn	Ala	Arg	Ile	Gly	Val	Phe	Tyr	Cys	Gly	Ala	Pro			
	920				925				930						935				
	ata	tta	gct	aaa	gaa	ctc	agc	aaa	ctc	tgc	aaa	gag	ttt	aac	caa	aag		2944	
	Ile	Leu	Ala	Lys	Glu	Leu	Ser	Lys	Leu	Cys	Lys	Glu	Phe	Asn	Gln	Lys			

Sequence Listing

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ggc aca acg aag ttc gag ttt cac aaa gaa cat ttt tagaaggccc
Gly Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
          955          960
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ctatcttttg tacctgattt gatgattcta ctgaagacat aacattagta aggaataagt 3110
cagagacaaa ttgtacataa taggaggaag cacatttaca gagaaaatac ataccaatat 3170
gatatgtgta taggttttgt atattcagtc atctgttata acataccaaa cttcagaact 3230
ccaaaaggga gactctgctt tggctgtatg gcttagaata tgggagggaa aaaaagacga 3290
caattgaatg gtcacgatac acatgaagaa tgagaatatt gggaaacagc taataagaag 3350
ttgaccttct tgataaagaa acactatgaa aatggcaagc atgaaaggac agacaatcat 3410
ggcttggatg gggaaaacaa aatacaattt tgaaagaaga agataatatt agtaggagta 3470
gtgggggact gatagctttg ttggtggaac ttataatggg gctaaggga tctttccaaa 3530
aaatgtctat gtagtaacta ctttttcttt tgctttgtga gtattttttg ggggtatttta 3590
atatactact tattagataa gaggatagaa aatacgtgta tatgcaattc ttattagtaa 3650
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gaaaaaaaaa aaaaaaaaaa aaa 3733

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<211> 963

<212> PRT

<213> Solanum tuberosum

<400> 8

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Gly Asn Ile Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Ile Leu
          35          40          45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
          50          55          60
Thr Val Ile Asn Ile Asp Ala Ser Asp Pro Ala Thr Gly Val Gly Ile
          65          70          75          80
Gly Gly Val Ser Ile Glu Thr Pro Ala Ser Leu Thr Ser Thr Ser Gly
          85          90          95
Thr Arg Ser Pro Thr Met Arg Arg Ser Thr Ser Asn Lys Leu Arg Gln
          100          105          110
Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
          115          120          125
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
          130          135          140
His Ala Ser Arg Thr Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val
          145          150          155          160
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
          165          170          175
Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
          180          185          190
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
          195          200          205
Asn Glu Val Glu Asn Asn Phe Ala Lys Leu Ala Lys Asp Gly Tyr Leu
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Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu
          225          230          235          240
Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys
          245          250          255
Val Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile
          260          265          270
Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met Val
          275          280          285
Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu Ile
          290          295          300
Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln
          305          310          315          320
Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg

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Sequence Listing

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Leu	Ser	Gln	Asn	355	Leu	Gln	Gly	Leu	360	Arg	Lys	Arg	Ser	Pro	365	Ile	Arg	Arg	
Met	Ser	Thr	Lys	370	Leu	Val	Tyr	Ser	375	Leu	Gln	Glu	Asn	Trp	380	Lys	Arg	Ile	
385	Trp	Val	Leu	Val	405	Leu	Trp	Ile	390	Leu	Ile	Met	Ile	Gly	410	Leu	Phe	Leu	Trp
Lys	Phe	Tyr	Leu	Tyr	420	Lys	Gln	Lys	425	Ser	Ala	Phe	Gln	Val	430	Met	Gly	Tyr	
Cys	Leu	Leu	Thr	Ala	435	Lys	Gly	Ala	440	Ala	Glu	Thr	Leu	Lys	445	Phe	Asn	Met	
Ala	Leu	Ile	Leu	Leu	450	Pro	Val	Cys	455	Arg	Asn	Thr	Ile	Thr	460	Phe	Leu	Arg	
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His	Lys	Thr	Val	Ala	485	Ala	Ile	Val	490	Thr	Gly	Ile	Ile	Leu	495	His	Ala	Asn	Asn
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Gln	Tyr	Ile	Asp	Leu	530	Val	Lys	Gly	535	Val	Glu	Gly	Val	Thr	540	Gly	Ile	Ile	
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Phe	Asn	Ala	Phe	Trp	580	Tyr	Ser	His	585	His	Leu	Leu	Ile	Ile	590	Val	Tyr	Ile	
Val	Leu	Ile	His	Gly	595	Thr	Phe	Leu	600	Tyr	Leu	Val	His	605	Asn	Trp	Tyr		
Ser	Lys	Thr	Thr	Trp	610	Met	Tyr	Leu	615	Ala	Val	Pro	Val	Leu	620	Leu	Tyr	Ala	
Gly	Glu	Arg	Thr	Leu	625	Arg	Phe	Phe	630	Arg	Ser	Gly	Leu	Tyr	635	Thr	Val	Arg	
Leu	Leu	Lys	Val	Ala	645	Ile	Tyr	Pro	650	Gly	Asn	Val	Leu	Thr	655	Leu	Gln	Met	
Ser	Lys	Pro	Pro	Gln	660	Phe	Arg	Tyr	665	Lys	Ser	Gly	Gln	Tyr	670	Met	Phe	Val	
Gln	Cys	Pro	Ala	Val	675	Ser	Pro	Phe	680	Glu	Trp	His	Pro	Phe	685	Ser	Ile	Thr	
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Thr	Ser	Leu	Pro	Lys	740	Leu	Leu	Ile	745	Asp	Gly	Pro	Tyr	Gly	750	Ala	Pro	Ala	
Gln	Asp	Tyr	Arg	Lys	755	Tyr	Asp	Val	760	Leu	Leu	Leu	Val	Gly	765	Leu	Gly	Ile	
Gly	Ala	Thr	Pro	Phe	770	Ile	Ser	Ile	775	Leu	Lys	Asp	Leu	Leu	780	Lys	Asn	Ile	
Val	Thr	Met	Glu	Glu	785	Gln	Ala	Asp	790	Leu	Val	Ser	Asp	Phe	795	Ser	Gly	Asn	
Ser	Asp	Met	Ser	Ala	805	Ala	Thr	Ser	810	Glu	Gln	Pro	Ala	Leu	815	Asn	Lys	Ile	
Ser	Pro	Lys	Lys	Arg	820	Lys	Ser	Thr	825	Leu	Lys	Thr	Thr	Asn	830	Ala	Tyr	Phe	

Sequence Listing

Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val
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850 855 860
Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu
865 870 875 880
Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile
885 890 895
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900 905 910
Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly
915 920 925
Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Lys Leu
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945 950 955 960
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<221> CDS
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<223> coding for NADPH oxidase
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Met Arg Gly Leu Pro Gly His Glu Arg
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Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Ala Phe Ser Pro Ala
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Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val Asp Ser
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Sequence Listing																
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ctc Leu	gct Ala	aaa Lys 220	gac Asp	ggt Gly	tac Tyr	ctt Leu	tat Tyr 225	cgt Arg	tcc Ser	gat Asp	ttc Phe	gca Ala 230	caa Gln	tgc Cys	atc Ile	844
ggt Gly	cag Gln 235	tac Tyr	tca Ser	cgc Arg	cgg Arg	cga Arg 240	tca Ser	cta Leu	cag Gln	ttt Phe 245	aat Asn 245	tat Tyr	aga Arg	tta Leu	att Ile	892
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gaa Glu	ttt Phe	gcg Ala	ttg Leu	gaa Glu 270	ttg Leu	ttt Phe	gat Asp	gct Ala	tta Leu 275	agt Ser	aga Arg	aga Arg	aga Arg	aga Arg 280	ttg Leu	988
aag Lys	ggt Val	gat Asp	aag Lys 285	att Ile	agc Ser	caa Gln	gag Glu	gaa Glu 290	ttg Leu	tat Tyr	gag Glu	tat Tyr	tgg Trp 295	tct Ser	caa Gln	1036
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gtg Val	gac Asp 315	aag Lys	aat Asn	gaa Glu	gat Asp	ggt Gly 320	cga Arg	att Ile	ggt Gly	gaa Glu	gaa Glu 325	gaa Glu	gta Val	aaa Lys	gag Glu	1132
atc Ile 330	atc Ile	atg Met	cta Leu	agt Ser	gcc Ala 335	tct Ser	gca Ala	aac Asn	aaa Lys	tta Leu 340	tca Ser	aga Arg	tta Leu	aaa Lys	gaa Glu 345	1180
caa Gln	gca Ala	gag Glu	gag Glu	tat Tyr 350	gca Ala	gct Ala	ctg Leu	atc Ile	atg Met 355	gaa Glu	gaa Glu	tta Leu	gat Asp	cct Pro 360	gaa Glu	1228
aga Arg	ctt Leu	ggc Gly	tac Tyr 365	att Ile	gag Glu	cta Leu	tgg Trp	cag Gln 370	ctg Leu	gaa Glu	aca Thr	ctt Leu	ctc Leu 375	ctc Leu	caa Gln	1276
aag Lys	gac Asp	act Thr 380	tac Tyr	ctc Leu	aac Asn	tac Tyr	agt Ser 385	caa Gln	gca Ala	cta Leu	agc Ser	tac Tyr 390	aca Thr	agc Ser	caa Gln	1324
gct Ala 395	ttg Leu	agc Ser	caa Gln	aat Asn	ctg Leu 400	caa Gln	ggg Gly	ttg Leu	agg Arg	aag Lys	aga Arg 405	agc Ser	cca Pro	ata Ile	aga Arg	1372
aga Arg 410	atg Met	agc Ser	aca Thr	aaa Lys	ctt Leu 415	gtc Val	tat Tyr	tca Ser	ctg Leu	caa Gln 420	gag Glu	aat Asn	tgg Trp	aag Lys	aga Arg 425	1420
att Ile	tgg Trp	ggt Val	ctg Leu 430	gtc Val	ttg Leu	tgg Trp	att Ile	ttg Leu	ata Ile 435	atg Met	att Ile	gga Gly	ctt Leu	ttt Phe 440	ctt Leu	1468
tgg Trp	aag Lys	ttc Phe	tat Tyr 445	cag Gln	tac Tyr	aaa Lys	cag Gln	aaa Lys 450	agt Ser	gca Ala	ttt Phe	caa Gln	gtc Val 455	atg Met	ggt Gly	1516
tat Tyr	tgc Cys	ctt Leu 460	cta Leu	aca Thr	gct Ala	aag Lys	ggt Gly 465	gct Ala	gct Ala	gag Glu	act Thr	ctc Leu 470	aag Lys	ttc Phe	aac Asn	1564
atg Met	gct Ala 475	tta Leu	ata Ile	ttg Leu	ttg Leu	cca Pro 480	gta Val	tgc Cys	agg Arg	aac Asn	acc Thr 485	att Ile	aca Thr	ttc Phe	ctc Leu	1612
agg Arg 490	tct Ser	act Thr	aaa Lys	ttg Leu	agc Ser 495	tgt Cys	ttt Phe	gta Val	ccc Pro	ttt Phe 500	gat Asp	gac Asp	aac Asn	ata Ile	aac Asn 505	1660

Sequence Listing

ttt	cac	aag	act	gtt	gct	gca	gcc	att	gtc	act	ggg	atc	ata	ctc	cat	1708
Phe	His	Lys	Thr	Val	Ala	Ala	Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	
				510					515					520		
gcc	ggg	aat	cac	ctt	gta	tgt	gat	ttc	cca	aag	ctt	ata	cat	gca	aat	1756
Ala	Gly	Asn	His	Leu	Val	Cys	Asp	Phe	Pro	Lys	Leu	Ile	His	Ala	Asn	
			525					530					535			
agt	acg	aat	tat	cag	aaa	tat	ttg	gtg	aat	gat	ttt	ggc	cca	agc	cag	1804
Ser	Thr	Asn	Tyr	Gln	Lys	Tyr	Leu	Val	Asn	Asp	Phe	Gly	Pro	Ser	Gln	
			540				545					550				
cct	cag	tac	ata	gat	ctt	gtt	aaa	gga	gtg	gag	ggg	gtg	act	gga	ata	1852
Pro	Gln	Tyr	Ile	Asp	Leu	Val	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	
			555			560					565					
gtt	atg	gta	atc	ctc	atg	gcc	att	gct	ttc	act	ctt	gca	acg	cga	tgg	1900
Val	Met	Val	Ile	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	
				570		575				580					585	
ttt	agg	cgg	agc	ctc	att	aag	tta	ccc	aaa	cct	ttt	gat	aga	ctc	act	1948
Phe	Arg	Arg	Ser	Leu	Ile	Lys	Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	
				590					595					600		
ggg	ttc	aat	gcg	ttc	tgg	tac	tcg	cac	cac	ctt	ctc	atc	att	gtc	tac	1996
Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Leu	Ile	Ile	Val	Tyr	
			605					610					615			
atc	gta	ctg	atc	atc	cat	ggc	aca	ttc	ctc	tac	ctt	gtg	cat	aac	tgg	2044
Ile	Val	Leu	Ile	Ile	His	Gly	Thr	Phe	Leu	Tyr	Leu	Val	His	Asn	Trp	
			620			625						630				
tac	tcc	aaa	acg	aca	tgg	atg	tat	ata	gca	gtt	cct	gta	ctt	ctt	tac	2092
Tyr	Ser	Lys	Thr	Thr	Trp	Met	Tyr	Ile	Ala	Val	Pro	Val	Leu	Leu	Tyr	
						640					645					
gca	ggg	gaa	aga	act	ctt	aga	ttc	ttc	cga	tca	ggc	tta	tac	agt	gtc	2140
Ala	Gly	Glu	Arg	Thr	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Ser	Val	
					650	655			660						665	
cgg	ctt	cta	aaa	gta	gca	ata	tat	cct	gga	aat	gtc	ctt	act	ctg	caa	2188
Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	
				670					675					680		
atg	tct	aag	cct	ccg	caa	ttt	cga	tac	aag	agt	gga	cag	tat	atg	ttt	2236
Met	Ser	Lys	Pro	Pro	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	
				685				690					695			
gtc	cag	tgt	cca	gct	gtt	tct	cca	ttc	gag	tgg	cat	cca	ttt	tcc	att	2284
Val	Gln	Cys	Pro	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	
			700				705				710					
act	tca	gct	cct	ggg	gat	gac	ttg	agc	att	cat	atc	cga	caa	ctt		2332
Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	
				715		720				725						
ggg	gac	tgg	act	caa	gaa	ctc	aag	cga	gtg	ttt	tcc	gag	gct	tgc	gag	2380
Gly	Asp	Trp	Thr	Gln	Glu	Leu	Lys	Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	
				730	735				740					745		
cag	cca	gag	gct	gga	aag	agt	ggc	ctg	ctc	aga	gct	gac	gaa	aac	acc	2428
Gln	Pro	Glu	Ala	Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	
				750				755						760		
aaa	aca	agt	ttg	cca	aag	cta	tta	ata	gat	gga	cct	tat	gga	gct	cca	2476
Lys	Thr	Ser	Leu	Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	
			765					770				775				
gca	caa	gat	tac	cgg	aag	tat	gat	gtc	tta	ctg	ctt	gtt	ggg	ctt	ggc	2524
Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	Asp	Val	Leu	Leu	Leu	Val	Gly	Leu	Gly	
			780				785					790				
att	gga	gca	act	ccc	ttt	ata	agt	atc	ctg	aaa	gac	ttg	ctc	aaa	aac	2572
Ile	Gly	Ala	Thr	Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Lys	Asn	
						800					805					
atc	gtc	gca	atg	gag	gag	caa	gca	gat	tta	gtc	tcg	gat	ttc	agt	gga	2620
Ile	Val	Ala	Met	Glu	Glu	Gln	Ala	Asp	Leu	Val	Ser	Asp	Phe	Ser	Gly	
				810	815					820					825	
aac	tcg	gac	atg	agt	gct	gca	aca	agt	gaa	caa	cca	gct	ctc	aac	aag	2668
Asn	Ser	Asp	Met	Ser	Ala	Ala	Thr	Ser	Glu	Gln	Pro	Ala	Leu	Asn	Lys	
				830					835					840		

Sequence Listing

att tct cca aaa aag aga aag agt act cta aaa acc aca aat gca tat 2716
Ile Ser Pro Lys Lys Arg Lys Ser Thr Leu Lys Thr Thr Asn Ala Tyr
845 850 855

ttt tat tgg gtg acc cgg gag caa gga tca ttt gat tgg ttc aaa ggt 2764
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly
860 865 870

gtt atg aat gaa gtg gct gaa ctt gat caa agg ggt gtc atc gag atg 2812
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
875 880 885

cat aac tac ttg acg agt gtt tat gag gaa ggg gat gca cgt tca gct 2860
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
890 895 900 905

ctc att acc atg gtc cag gca ctt aac cat gct aag aat ggg gtt gat 2908
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
910 915 920

att gta tca ggc acc agt gtg agg aca cat ttc gcc agg ccg aat tgg 2956
Ile Val Ser Gly Thr Ser Val Arg Thr His Phe Ala Arg Pro Asn Trp
925 930 935

agg aaa gta ttt tcc aag acc tta acc aag cat gca aat gca aga ata 3004
Arg Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile
940 945 950

gga gtt ttc tac tgt ggt gca ccc ata tta gct aaa gaa ctc agc caa 3052
Gly Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Gln
955 960 965

ctc tgc aaa gag ttt aac caa aag ggc aca aca aag ttc gag ttt cac 3100
Leu Cys Lys Glu Phe Asn Gln Lys Gly Thr Thr Lys Phe Glu Phe His
970 975 980 985

aaa gaa cat ttt tagaagggcc tggagtatga ttaatcttgc atcaacggta 3152
Lys Glu His Phe

cacacatcta tcttcggtac cttatttgat tattctactg aagagataac attagtaagg 3212
aataagtcag agataaattg tacataatag ggaagaagac tatttcaaga gaaaatacat 3272
accaataaga tgtgaaaaaa aaaaaaaaaa aaaaactcgt gccg 3316

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<212> PRT
<213> Lycopersicon esculentum
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Met Arg Gly Leu Pro Gly His Glu Arg Arg Trp Thr Ser Asp Thr Val
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Ser Ser Gly Lys Asp Leu Ser Gly Glu Ser Ser Pro Gly Thr Asp Ser
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Gly Asn Ile Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Ile Leu
35 40 45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
50 55 60
Thr Val Ile Asn Ile Asp Gly Ser Asp Pro Ala Ser Gly Val Gly Ile
65 70 75 80
Gly Gly Ala Ser Ile Glu Thr Pro Ala Ser Val Thr Ser Thr Ser Glu
85 90 95
Thr Arg Ser Pro Met Met Arg Arg Ser Thr Ser Asn Lys Phe Arg Gln
100 105 110
Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
115 120 125
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
130 135 140
His Ala Ser Arg Ala Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val
145 150 155 160
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
165 170 175
Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
180 185 190
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
195 200 205

Sequence Listing

Asn	Glu	Val	Glu	Asn	Asn	Phe	Ala	Lys	Leu	Ala	Lys	Asp	Gly	Tyr	Leu
210						215					220				
Tyr	Arg	Ser	Asp	Phe	Ala	Gln	Cys	Ile	Gly	Gln	Tyr	Ser	Arg	Arg	Arg
225					230					235					240
Ser	Leu	Gln	Phe	Asn	Tyr	Arg	Leu	Ile	Thr	Leu	Ile	Leu	Ile	Asn	Tyr
				245					250					255	
Leu	Val	Lys	Gly	Met	Lys	Asp	Ser	Lys	Glu	Phe	Ala	Leu	Glu	Leu	Phe
			260					265					270		
Asp	Ala	Leu	Ser	Arg	Arg	Arg	Arg	Leu	Lys	Val	Asp	Lys	Ile	Ser	Gln
		275					280					285			
Glu	Glu	Leu	Tyr	Glu	Tyr	Trp	Ser	Gln	Ile	Thr	Asp	Gln	Ser	Phe	Asp
	290					295					300				
Ser	Arg	Leu	Gln	Ile	Phe	Phe	Asp	Met	Val	Asp	Lys	Asn	Glu	Asp	Gly
305					310					315					320
Arg	Ile	Gly	Glu	Glu	Glu	Val	Lys	Glu	Ile	Ile	Met	Leu	Ser	Ala	Ser
				325					330					335	
Ala	Asn	Lys	Leu	Ser	Arg	Leu	Lys	Glu	Gln	Ala	Glu	Glu	Tyr	Ala	Ala
			340					345					350		
Leu	Ile	Met	Glu	Glu	Leu	Asp	Pro	Glu	Arg	Leu	Gly	Tyr	Ile	Glu	Leu
		355					360					365			
Trp	Gln	Leu	Glu	Thr	Leu	Leu	Gln	Lys	Asp	Thr	Tyr	Leu	Asn	Tyr	
	370				375					380					
Ser	Gln	Ala	Leu	Ser	Tyr	Thr	Ser	Gln	Ala	Leu	Ser	Gln	Asn	Leu	Gln
385					390					395					400
Gly	Leu	Arg	Lys	Arg	Ser	Pro	Ile	Arg	Arg	Met	Ser	Thr	Lys	Leu	Val
				405					410					415	
Tyr	Ser	Leu	Gln	Glu	Asn	Trp	Lys	Arg	Ile	Trp	Val	Leu	Val	Leu	Trp
			420					425					430		
Ile	Leu	Ile	Met	Ile	Gly	Leu	Phe	Leu	Trp	Lys	Phe	Tyr	Gln	Tyr	Lys
		435					440					445			
Gln	Lys	Ser	Ala	Phe	Gln	Val	Met	Gly	Tyr	Cys	Leu	Leu	Thr	Ala	Lys
	450					455					460				
Gly	Ala	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro
465					470					475					480
Val	Cys	Arg	Asn	Thr	Ile	Thr	Phe	Leu	Arg	Ser	Thr	Lys	Leu	Ser	Cys
				485					490					495	
Phe	Val	Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His	Lys	Thr	Val	Ala	Ala
			500					505					510		
Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly	Asn	His	Leu	Val	Cys
		515					520					525			
Asp	Phe	Pro	Lys	Leu	Ile	His	Ala	Asn	Ser	Thr	Asn	Tyr	Gln	Lys	Tyr
	530					535					540				
Leu	Val	Asn	Asp	Phe	Gly	Pro	Ser	Gln	Pro	Gln	Tyr	Ile	Asp	Leu	Val
545					550					555					560
Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	Val	Met	Val	Ile	Leu	Met	Ala
				565					570					575	
Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Ser	Leu	Ile	Lys
			580					585					590		
Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr
		595					600					605			
Ser	His	His	Leu	Leu	Ile	Ile	Val	Tyr	Ile	Val	Leu	Ile	Ile	His	Gly
	610					615					620				
Thr	Phe	Leu	Tyr	Leu	Val	His	Asn	Trp	Tyr	Ser	Lys	Thr	Thr	Trp	Met
625					630					635					640
Tyr	Ile	Ala	Val	Pro	Val	Leu	Leu	Tyr	Ala	Gly	Glu	Arg	Thr	Leu	Arg
				645					650					655	
Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Ser	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile
			660					665					670		
Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro	Pro	Gln	Phe
		675					680					685			
Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro	Ala	Val	Ser
	690					695					700				
Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp

Sequence Listing

705	Tyr	Leu	Ser	Ile	His	710	Ile	Arg	Gln	Leu	Gly	715	Asp	Trp	Thr	Gln	Glu	720	Leu
	Lys	Arg	Val	Phe	725	Glu	Ala	Cys	Glu	730	Gln	Pro	Glu	Ala	Gly	735	Lys	Ser	
	Gly	Leu	Leu	Arg	740	Ala	Asp	Glu	Asn	745	Thr	Lys	Thr	Ser	Leu	Pro	Lys	Leu	
	Leu	Ile	Asp	Gly	755	Pro	Tyr	Gly	Ala	760	Pro	Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	
	Asp	Val	Leu	Leu	770	Val	Gly	Leu	Gly	775	Ile	Gly	Ala	Thr	Pro	Phe	Ile		
785	Ser	Ile	Leu	Lys	790	Leu	Leu	Lys	Asn	795	Ile	Val	Ala	Met	Glu	Glu	Gln		
	Ala	Asp	Leu	Val	805	Ser	Asp	Phe	Ser	810	Asn	Ser	Asp	Met	Ser	Ala	Ala		
	Thr	Ser	Glu	Gln	820	Pro	Ala	Leu	Asn	825	Lys	Ile	Ser	Pro	Lys	Lys	Arg	Lys	
	Ser	Thr	Leu	Lys	835	Thr	Thr	Asn	Ala	840	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	
	Gln	Gly	Ser	Phe	850	Trp	Phe	Lys	Gly	855	Val	Met	Asn	Glu	Val	Ala	Glu		
865	Leu	Asp	Gln	Arg	870	Gly	Val	Ile	Glu	875	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	
	Tyr	Glu	Glu	Gly	885	Asp	Ala	Arg	Ser	890	Ala	Leu	Ile	Thr	Met	Val	Gln	Ala	
	Leu	Asn	His	Ala	900	Lys	Asn	Gly	Val	905	Asp	Ile	Val	Ser	Gly	Thr	Ser	Val	
	Arg	Thr	His	Phe	915	Ala	Arg	Pro	Asn	920	Trp	Arg	Lys	Val	Phe	Ser	Lys	Thr	
	Leu	Thr	Lys	His	930	Ala	Asn	Ala	Arg	935	Ile	Gly	Val	Phe	Tyr	Cys	Gly	Ala	
945	Pro	Ile	Leu	Ala	945	Lys	Glu	Leu	Ser	950	Gln	Leu	Cys	Lys	Glu	Phe	Asn	Gln	
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 <222> (15)..(2846)
 <223> coding for NADPH oxidase
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tca	ttt	gat	tca	gtt	tcc	gcc	gga	aaa	acc	gcc	gtc	gga	agt	gca	tca	98
Ser	Phe	Asp	Ser	Val	Ser	Ala	Gly	Lys	Thr	Ala	Val	Gly	Ser	Ala	Ser	
	15				20					25						
act	tca	ccg	gga	act	gaa	tac	tcc	att	aac	ggg	gat	caa	gag	ttc	gtt	146
Thr	Ser	Pro	Gly	Thr	Glu	Tyr	Ser	Ile	Asn	Gly	Asp	Gln	Glu	Phe	Val	
	30				35				40							
gaa	gtc	aca	atc	gat	ctt	caa	gac	gat	gac	aca	atc	gtt	ctt	cgt	agc	194
Glu	Val	Thr	Ile	Asp	Leu	Gln	Asp	Asp	Asp	Thr	Ile	Val	Leu	Arg	Ser	
	45				50				55						60	
gtc	gag	cca	gca	acc	gcc	att	aat	gtc	atc	gga	gat	atc	tcc	gac	gac	242
Val	Glu	Pro	Ala	Thr	Ala	Ile	Asn	Val	Ile	Gly	Asp	Ile	Ser	Asp	Asp	
			65					70					75			
aac	acc	gga	ata	atg	act	ccg	gtt	tcg	att	tcg	aga	tct	ccg	acg	atg	290
Asn	Thr	Gly	Ile	Met	Thr	Pro	Val	Ser	Ile	Ser	Arg	Ser	Pro	Thr	Met	
			80					85					90			

Sequence Listing

aaa	cga	act	tca	tct	aat	cgg	ttc	cga	caa	ttc	tca	caa	gag	ctt	aaa	338
Lys	Arg	Thr	Ser	Ser	Asn	Arg	Phe	Arg	Gln	Phe	Ser	Gln	Glu	Leu	Lys	
		95					100					105				
gcc	gaa	gct	gtg	gcg	aaa	gcg	aaa	cag	tta	tct	cag	gag	ttg	aaa	cga	386
Ala	Glu	Ala	Val	Ala	Lys	Ala	Lys	Gln	Leu	Ser	Gln	Glu	Leu	Lys	Arg	
	110					115					120					
ttc	tca	tggt	tct	cgt	tct	ttc	tca	ggt	aac	tta	acc	act	act	agt	acc	434
Phe	Ser	Trp	Ser	Arg	Ser	Phe	Ser	Gly	Asn	Leu	Thr	Thr	Thr	Ser	Thr	
125					130					135					140	
gcc	gct	aat	caa	agc	ggc	ggt	gct	ggt	ggt	ggt	ttg	gtg	aac	tcg	gct	482
Ala	Ala	Asn	Gln	Ser	Gly	Gly	Ala	Gly	Gly	Gly	Leu	Val	Asn	Ser	Ala	
				145				150						155		
tta	gaa	gcg	cga	gcg	ttg	cga	aag	caa	cgt	gct	cag	tta	gat	cgg	act	530
Leu	Glu	Ala	Arg	Ala	Leu	Arg	Lys	Gln	Arg	Ala	Gln	Leu	Asp	Arg	Thr	
			160					165					170			
cgg	tct	agt	gct	caa	aga	gct	ctt	cgt	ggt	ttg	aga	ttc	att	agc	aat	578
Arg	Ser	Ser	Ala	Gln	Arg	Ala	Leu	Arg	Gly	Leu	Arg	Phe	Ile	Ser	Asn	
		175					180					185				
aag	caa	aag	aac	gtt	gat	ggt	tggt	aac	gat	gtt	caa	tca	aat	ttc	gaa	626
Lys	Gln	Lys	Asn	Val	Asp	Gly	Trp	Asn	Asp	Val	Gln	Ser	Asn	Phe	Glu	
	190					195					200					
aaa	ttc	gaa	aaa	aat	ggt	tac	atc	tat	cgc	tcc	gat	ttc	gct	caa	tgc	674
Lys	Phe	Glu	Lys	Asn	Gly	Tyr	Ile	Tyr	Arg	Ser	Asp	Phe	Ala	Gln	Cys	
205					210					215					220	
ata	gga	atg	aaa	gat	tcg	aaa	gaa	ttt	gca	ttg	gaa	ctg	ttc	gat	gca	722
Ile	Gly	Met	Lys	Asp	Ser	Lys	Glu	Phe	Ala	Leu	Glu	Leu	Phe	Asp	Ala	
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ttg	agt	aga	aga	aga	aga	tta	aaa	gta	gag	aaa	atc	aat	cac	gat	gag	770
Leu	Ser	Arg	Arg	Arg	Arg	Leu	Lys	Val	Glu	Lys	Ile	Asn	His	Asp	Glu	
			240					245					250			
ctt	tat	gag	tat	tggt	tca	caa	atc	aac	gac	gag	agt	ttt	gat	tct	cgt	818
Leu	Tyr	Glu	Tyr	Trp	Ser	Gln	Ile	Asn	Asp	Glu	Ser	Phe	Asp	Ser	Arg	
		255					260					265				
ctc	cag	atc	ttc	ttc	gac	ata	gtg	gac	aag	aat	gaa	gat	ggg	aga	att	866
Leu	Gln	Ile	Phe	Phe	Asp	Ile	Val	Asp	Lys	Asn	Glu	Asp	Gly	Arg	Ile	
	270					275					280					
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Thr	Glu	Glu	Glu	Val	Lys	Glu	Ile	Ile	Met	Leu	Ser	Ala	Ser	Ala	Asn	
285					290					295					300	
aag	cta	tca	aga	tta	aag	gaa	caa	gca	gag	gaa	tat	gca	gct	ttg	att	962
Lys	Leu	Ser	Arg	Leu	Lys	Glu	Gln	Ala	Glu	Glu	Tyr	Ala	Ala	Leu	Ile	
				305				310						315		
atg	gaa	gag	tta	gat	cct	gaa	aga	ctt	ggc	tac	ata	gag	cta	tggt	caa	1010
Met	Glu	Glu	Leu	Asp	Pro	Glu	Arg	Leu	Gly	Tyr	Ile	Glu	Leu	Trp	Gln	
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Leu	Glu	Thr	Leu	Leu	Leu	Gln	Lys	Asp	Thr	Tyr	Leu	Asn	Tyr	Ser	Gln	
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Arg	Gly	Lys	Ser	Arg	Ile	His	Arg	Met	Ser	Ser	Asp	Phe	Val	Tyr	Ile	
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atg	caa	gag	aat	tggt	aaa	agg	ata	tggt	gtt	tta	tcc	tta	tggt	atc	atg	1202
Met	Gln	Glu	Asn	Trp	Lys	Arg	Ile	Trp	Val	Leu	Ser	Leu	Trp	Ile	Met	
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atc	atg	atc	gga	tta	ttc	ttg	tggt	aaa	ttc	ttc	caa	tac	aag	caa	aaa	1250
Ile	Met	Ile	Gly	Leu	Phe	Leu	Trp	Lys	Phe	Phe	Gln	Tyr	Lys	Gln	Lys	
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Asp	Ala	Phe	His	Val	Met	Gly	Tyr	Cys	Leu	Leu	Thr	Ala	Lys	Gly	Ala	
		415					420					425				

Sequence Listing

gct	gaa	aca	ctt	aaa	ttc	aac	atg	gct	cta	ata	ctt	ttc	cca	ggt	tgc	1346
Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Phe	Pro	Val	Cys	
430						435					440					
aga	aac	acc	att	act	tgg	ctt	aga	tcc	aca	aga	ctc	tct	tac	ttc	ggt	1394
Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Ser	Thr	Arg	Leu	Ser	Tyr	Phe	Val	
445					450					455					460	
cct	ttt	gat	gat	aat	atc	aac	ttc	cac	aag	aca	att	gct	gga	gcc	att	1442
Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His	Lys	Thr	Ile	Ala	Gly	Ala	Ile	
				465					470					475		
gta	gta	gct	gtg	atc	ctt	cat	att	gga	gac	cat	ctt	gct	tgt	gat	ttc	1490
Val	Val	Ala	Val	Ile	Leu	His	Ile	Gly	Asp	His	Leu	Ala	Cys	Asp	Phe	
			480					485					490			
cct	aga	att	gtt	aga	gcc	acc	gaa	tac	gat	tac	aat	cgg	tat	ctg	ttt	1538
Pro	Arg	Ile	Val	Arg	Ala	Thr	Glu	Tyr	Asp	Tyr	Asn	Arg	Tyr	Leu	Phe	
		495					500					505				
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His	Tyr	Phe	Gln	Thr	Lys	Gln	Pro	Thr	Tyr	Phe	Asp	Leu	Val	Lys	Gly	
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Pro	Glu	Gly	Ile	Thr	Gly	Ile	Leu	Met	Val	Ile	Leu	Met	Ile	Ile	Ser	
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Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Asn	Leu	Val	Lys	Leu	Pro	
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aag	cca	ttt	gat	cga	cta	acc	ggt	ttt	aac	gcc	ttt	tgg	tat	tcg	cat	1730
Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	
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cat	ttg	ttc	gtc	att	gtt	tat	atc	ttg	ctt	att	ctt	cat	ggt	atc	ttc	1778
His	Leu	Phe	Val	Ile	Val	Tyr	Ile	Leu	Leu	Ile	Leu	His	Gly	Ile	Phe	
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ctc	tat	ttc	gcc	aag	cct	tgg	tat	gtt	cgt	acg	aca	tgg	atg	tat	ctt	1826
Leu	Tyr	Phe	Ala	Lys	Pro	Trp	Tyr	Val	Arg	Thr	Thr	Trp	Met	Tyr	Leu	
	590					595					600					
gca	gta	cca	gtt	tta	ctc	tat	ggt	gga	gaa	aga	aca	ctt	agg	tac	ttc	1874
Ala	Val	Pro	Val	Leu	Leu	Tyr	Gly	Gly	Glu	Arg	Thr	Leu	Arg	Tyr	Phe	
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cgt	tct	ggt	tct	tat	tcg	gtt	cga	ctg	ctt	aag	gtt	gct	ata	tat	cct	1922
Arg	Ser	Gly	Ser	Tyr	Ser	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr	Pro	
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ggt	aat	gtt	cta	acg	cta	caa	atg	tcg	aaa	cca	act	caa	ttt	cgt	tac	1970
Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro	Thr	Gln	Phe	Arg	Tyr	
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aaa	agc	gga	caa	tac	atg	ttt	gtc	caa	tgt	cct	gcg	gtt	tcg	cca	ttc	2018
Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro	Ala	Val	Ser	Pro	Phe	
		655				660						665				
gag	tgg	cat	cca	ttc	tca	att	act	tcc	gca	cct	gaa	gat	tat	atc		2066
Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Glu	Asp	Asp	Tyr	Ile	
	670					675					680					
agc	att	cac	att	aga	caa	ctt	ggt	gat	tgg	act	caa	gaa	ctc	aaa	aga	2114
Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp	Trp	Thr	Gln	Glu	Leu	Lys	Arg	
685					690					695					700	
gta	ttc	tct	gaa	gtt	tgt	gag	cca	ccg	gtt	ggc	ggt	aaa	agc	gga	ctt	2162
Val	Phe	Ser	Glu	Val	Cys	Glu	Pro	Pro	Val	Gly	Gly	Lys	Ser	Gly	Leu	
				705					710					715		
ctc	aga	gcc	gac	gaa	aca	aca	aag	aaa	agt	ttg	cca	aag	cta	ttg	ata	2210
Leu	Arg	Ala	Asp	Glu	Thr	Thr	Lys	Lys	Ser	Leu	Pro	Lys	Leu	Leu	Ile	
			720					725					730			
gat	gga	ccg	tac	ggt	gca	cca	gca	caa	gat	tat	agg	aaa	tat	gat	gtt	2258
Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	Asp	Val	
		735					740					745				
ctc	tta	tta	gtt	ggt	ctt	ggc	att	ggt	gca	act	cca	ttt	atc	agt	atc	2306
Leu	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Phe	Ile	Ser	Ile	
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Sequence Listing

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Leu Lys Asp Leu Leu Asn Ile Val Lys Met Glu Glu His Ala Asp
765 770 775 780
tcg atc tcg gat ttc agt aga tca tca gaa tac agc aca gga agc aac 2402
Ser Ile Ser Asp Phe Ser Arg Ser Ser Glu Tyr Ser Thr Gly Ser Asn
785 790 795
ggt gac acg cca aga cga aag aga ata cta aaa acc aca aat gct tat 2450
Gly Asp Thr Pro Arg Arg Lys Arg Ile Leu Lys Thr Thr Asn Ala Tyr
800 805 810
ttc tac tgg gtc aca aga gaa caa ggc tct ttt gat tgg ttc aaa ggt 2498
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly
815 820 825
gtc atg aac gaa gtt gca gaa ctt gac caa cgg ggt gtg ata gag atg 2546
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
830 835 840
cat aac tat tta aca agt gtg tat gaa gaa ggt gat gct cgt tct gct 2594
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
845 850 855 860
ctc att aca atg gtt caa gct ctt aat cat gcc aaa aat ggt gtc gac 2642
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
865 870 875
att gtc tct ggc act agg gtc aga aca cac ttt gca aga cct aat tgg 2690
Ile Val Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp
880 885 890
aag aag gtt ctc aca aag cta agt tcc aag cat tgc aat gca aga aca 2738
Lys Lys Val Leu Thr Lys Leu Ser Ser Lys His Cys Asn Ala Arg Thr
895 900 905
gga gtg ttt tat tgc gga gta ccg gtt tta ggg aag gag ctt agc aaa 2786
Gly Val Phe Tyr Cys Gly Val Pro Val Leu Gly Lys Glu Leu Ser Lys
910 915 920
cta tgc aac aca ttc aat caa aaa ggt tca acc aag ttt gaa ttt cac 2834
Leu Cys Asn Thr Phe Asn Gln Lys Gly Ser Thr Lys Phe Glu Phe His
925 930 935 940
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Lys Glu His Phe
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aagtgattaa acgttaacac actgtcaaaa gtgagtgtgt taacgttttag ctccacacgt 3006
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35 40 45
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Thr Ala Ile Asn Val Ile Gly Asp Ile Ser Asp Asp Asn Thr Gly Ile
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Ser Asn Arg Phe Arg Gln Phe Ser Gln Glu Leu Lys Ala Glu Ala Val
100 105 110
Ala Lys Ala Lys Gln Leu Ser Gln Glu Leu Lys Arg Phe Ser Trp Ser
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Arg Ser Phe Ser Gly Asn Leu Thr Thr Thr Ser Thr Ala Ala Asn Gln
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ser Gly Gly Ala Gly Gly Gly Leu Val Asn Ser Ala Leu Glu Ala Arg

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Sequence Listing

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	Gln	Arg	Ala	Leu	Arg	Gly	Leu	Arg	Phe	Ile	Ser	Asn	Lys	Gln	Lys	Asn
				180					185					190		
	Val	Asp	Gly	Trp	Asn	Asp	Val	Gln	Ser	Asn	Phe	Glu	Lys	Phe	Glu	Lys
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	Asn	Gly	Tyr	Ile	Tyr	Arg	Ser	Asp	Phe	Ala	Gln	Cys	Ile	Gly	Met	Lys
		210					215					220				
	Asp	Ser	Lys	Glu	Phe	Ala	Leu	Glu	Leu	Phe	Asp	Ala	Leu	Ser	Arg	Arg
225					230					235						240
	Arg	Arg	Leu	Lys	Val	Glu	Lys	Ile	Asn	His	Asp	Glu	Leu	Tyr	Glu	Tyr
				245					250						255	
	Trp	Ser	Gln	Ile	Asn	Asp	Glu	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Ile	Phe
			260						265					270		
	Phe	Asp	Ile	Val	Asp	Lys	Asn	Glu	Asp	Gly	Arg	Ile	Thr	Glu	Glu	Glu
		275						280					285			
	Val	Lys	Glu	Ile	Ile	Met	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ser	Arg
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	Leu	Lys	Glu	Gln	Ala	Glu	Glu	Tyr	Ala	Ala	Leu	Ile	Met	Glu	Glu	Leu
305					310						315					320
	Asp	Pro	Glu	Arg	Leu	Gly	Tyr	Ile	Glu	Leu	Trp	Gln	Leu	Glu	Thr	Leu
				325						330					335	
	Leu	Leu	Gln	Lys	Asp	Thr	Tyr	Leu	Asn	Tyr	Ser	Gln	Ala	Leu	Ser	Tyr
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	Arg	Ile	His	Arg	Met	Ser	Ser	Asp	Phe	Val	Tyr	Ile	Met	Gln	Glu	Asn
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	Leu	Phe	Leu	Trp	Lys	Phe	Phe	Gln	Tyr	Lys	Gln	Lys	Asp	Ala	Phe	His
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	Val	Met	Gly	Tyr	Cys	Leu	Leu	Thr	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu
			420						425					430		
	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr	Ile
		435						440					445			
	Thr	Trp	Leu	Arg	Ser	Thr	Arg	Leu	Ser	Tyr	Phe	Val	Pro	Phe	Asp	Asp
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	Ile	Leu	His	Ile	Gly	Asp	His	Leu	Ala	Cys	Asp	Phe	Pro	Arg	Ile	Val
				485						490				495		
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	Thr	Lys	Gln	Pro	Thr	Tyr	Phe	Asp	Leu	Val	Lys	Gly	Pro	Glu	Gly	Ile
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		530					535					540				
	Thr	Arg	Trp	Phe	Arg	Arg	Asn	Leu	Val	Lys	Leu	Pro	Lys	Pro	Phe	Asp
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	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Phe	Val
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	Ile	Val	Tyr	Ile	Leu	Leu	Ile	Leu	His	Gly	Ile	Phe	Leu	Tyr	Phe	Ala
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	Tyr	Ser	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu
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	Thr	Leu	Gln	Met	Ser	Lys	Pro	Thr	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln
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Sequence Listing

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675 680 685
Arg Gln Leu Gly Asp Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu
690 695 700
Val Cys Glu Pro Pro Val Gly Gly Lys Ser Gly Leu Leu Arg Ala Asp
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725 730 735
Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val
740 745 750
Gly Leu Gly Ile Gly Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu
755 760 765
Leu Asn Asn Ile Val Lys Met Glu Glu His Ala Asp Ser Ile Ser Asp
770 775 780
Phe Ser Arg Ser Ser Glu Tyr Ser Thr Gly Ser Asn Gly Asp Thr Pro
785 790 795 800
Arg Arg Lys Arg Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val
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820 825 830
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Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met
850 855 860
Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly
865 870 875 880
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885 890 895
Thr Lys Leu Ser Ser Lys His Cys Asn Ala Arg Thr Gly Val Phe Tyr
900 905 910
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Met Lys Met Arg Arg Gly Asn Ser Ser Asn Asp His Glu
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Leu Gly Ile Leu Arg Gly Ala Asn Ser Asp Thr Asn Ser Asp Thr Glu
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agc atc gct agc gac cgt ggt gcc ttt agc ggt ccg ctt ggc cgg cct 266
Ser Ile Ala Ser Asp Arg Gly Ala Phe Ser Gly Pro Leu Gly Arg Pro
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aaa cgt gcg tcc aag aaa aac gca aga ttc gcc gac gat ctt ccc aag 314
Lys Arg Ala Ser Lys Lys Asn Ala Arg Phe Ala Asp Asp Leu Pro Lys
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aga agc aat agt gtt gct ggc ggc cgt ggt gat gac gat gag tac gtg 362
Arg Ser Asn Ser Val Ala Gly Gly Arg Gly Asp Asp Asp Glu Tyr Val
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Sequence Listing

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Gln	Gln	Ala	Ala	Gly	Gly	Gly	Gly	His	Leu	Glu	Asp	Pro	Glu	Leu	Ala	
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Leu	Leu	Thr	Lys	Lys	Thr	Leu	Glu	Ser	Ser	Leu	Asn	Asn	Thr	Thr	Ser	
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Phe	Asp	Arg	Thr	Ser	Ser	Ala	Ala	Ile	His	Ala	Leu	Lys	Gly	Leu	Lys	
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Phe	Ile	Ala	Thr	Lys	Thr	Ala	Ala	Trp	Pro	Ala	Val	Asp	Gln	Arg	Phe	
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gat	aaa	ctc	tcc	gct	gat	tcc	aac	ggc	ctc	tta	ctc	tct	gcc	aag	ttt	746
Asp	Lys	Leu	Ser	Ala	Asp	Ser	Asn	Gly	Leu	Leu	Leu	Ser	Ala	Lys	Phe	
190					195					200					205	
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Trp	Glu	Cys	Leu	Gly	Met	Asn	Lys	Glu	Ser	Lys	Asp	Phe	Ala	Asp	Gln	
			210					215					220			
ctc	ttt	aga	gca	tta	gct	gcg	cgg	aat	asn	gtc	tcc	ggc	gat	gca	atc	842
Leu	Phe	Arg	Ala	Leu	Ala	Arg	Arg	Asn	Asn	Val	Ser	Gly	Asp	Ala	Ile	
			225					230				235				
aca	aag	gaa	cag	ctt	agg	ata	ttc	tgg	gaa	cag	atc	tca	gac	gaa	agc	890
Thr	Lys	Glu	Gln	Leu	Arg	Ile	Phe	Trp	Glu	Gln	Ile	Ser	Asp	Glu	Ser	
		240				245					250					
ttt	gat	gcc	aaa	ctc	caa	gtc	ttt	gac	atg	gtg	gac	aaa	gat	gaa		938
Phe	Asp	Ala	Lys	Leu	Gln	Val	Phe	Asp	Met	Val	Asp	Lys	Asp	Glu		
	255				260					265						
gat	ggg	cga	gta	aca	gaa	gaa	gag	gtg	gct	gag	att	att	agt	ctt	agt	986
Asp	Gly	Arg	Val	Thr	Glu	Glu	Glu	Val	Ala	Glu	Ile	Ile	Ser	Leu	Ser	
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gct	tct	gca	aac	aag	ctc	tca	aat	att	caa	aag	caa	gcc	aaa	gaa	tat	1034
Ala	Ser	Ala	Asn	Lys	Leu	Ser	Asn	Ile	Gln	Lys	Gln	Ala	Lys	Glu	Tyr	
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gcg	gca	ctg	ata	atg	gaa	gag	ttg	gac	cca	gac	aat	gct	ggg	ttt	att	1082
Ala	Ala	Leu	Ile	Met	Glu	Glu	Leu	Asp	Pro	Asp	Asn	Ala	Gly	Phe	Ile	
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Met	Ile	Glu	Asn	Leu	Glu	Met	Leu	Leu	Leu	Gln	Ala	Pro	Asn	Gln	Ser	
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gtg	cgg	atg	gga	gac	agc	agg	ata	ctt	agt	cag	atg	tta	agt	cag	aag	1178
Val	Arg	Met	Gly	Asp	Ser	Arg	Ile	Leu	Ser	Gln	Met	Leu	Ser	Gln	Lys	
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ctt	aga	ccg	gca	aaa	gag	agc	aac	cct	tta	ttg	aga	tgg	tcg	gag	aaa	1226
Leu	Arg	Pro	Ala	Lys	Glu	Ser	Asn	Pro	Leu	Leu	Arg	Trp	Ser	Glu	Lys	
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atc	aaa	tat	ttc	ata	ctt	gat	aat	tgg	cag	aga	tta	tgg	atc	atg	atg	1274
Ile	Lys	Tyr	Phe	Ile	Leu	Asp	Asn	Trp	Gln	Arg	Leu	Trp	Ile	Met	Met	
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Leu	Trp	Leu	Gly	Ile	Cys	Gly	Gly	Leu	Phe	Thr	Tyr	Lys	Phe	Ile	Gln	
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tac	aag	aac	aaa	gct	gcc	tat	ggc	gtg	atg	ggc	tat	tgt	gtt	tgt	gtc	1370
Tyr	Lys	Asn	Lys	Ala	Ala	Tyr	Gly	Val	Met	Gly	Tyr	Cys	Val	Cys	Val	
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Sequence Listing

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Ala	Lys	Gly	Gly	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	
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ttg	cct	gtt	tgt	cga	aac	acc	atc	act	tgg	ctt	agg	aac	aag	acc	aag	1466
Leu	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Lys	
	430				435					440					445	
ctt	ggt	act	gtc	gtt	cct	ttt	gat	gat	agt	ctt	aac	ttc	cac	aag	ggt	1514
Leu	Gly	Thr	Val	Val	Pro	Phe	Asp	Asp	Ser	Leu	Asn	Phe	His	Lys	Val	
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att	gca	agc	ggg	ata	gtc	gtc	ggt	gtt	ctc	cat	gcg	ggt	gcc	cat		1562
Ile	Ala	Ser	Gly	Ile	Val	Val	Gly	Val	Leu	Leu	His	Ala	Gly	Ala	His	
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Leu	Thr	Cys	Asp	Phe	Pro	Arg	Leu	Ile	Ala	Ala	Asp	Glu	Asp	Thr	Tyr	
		480					485					490				
gag	ccg	atg	gaa	aaa	tac	ttt	ggg	gat	caa	ccg	act	agc	tac	tgg	tgg	1658
Glu	Pro	Met	Glu	Lys	Tyr	Phe	Gly	Asp	Gln	Pro	Thr	Ser	Tyr	Trp	Trp	
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Phe	Val	Lys	Gly	Val	Glu	Gly	Trp	Thr	Gly	Ile	Val	Met	Val	Val	Leu	
	510				515				520					525		
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Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Asn	Lys	
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ctt	aac	tta	cct	aac	ttc	ctc	aag	aag	ctt	acc	ggt	ttc	aac	gcc	ttt	1802
Leu	Asn	Leu	Pro	Asn	Phe	Leu	Lys	Lys	Leu	Thr	Gly	Phe	Asn	Ala	Phe	
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Trp	Tyr	Thr	His	His	Leu	Phe	Ile	Ile	Val	Tyr	Ala	Leu	Leu	Ile	Val	
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His	Gly	Ile	Lys	Leu	Tyr	Leu	Thr	Lys	Ile	Trp	Tyr	Gln	Lys	Thr	Thr	
	575					580					585					
tgg	atg	tat	ctt	gct	gta	ccc	atc	ctt	cta	tat	gca	tct	gag	agg	ctg	1946
Trp	Met	Tyr	Leu	Ala	Val	Pro	Ile	Leu	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	
	590				595				600					605		
ctc	cgt	gct	ttc	aga	tca	agc	atc	aaa	ccg	gtt	aag	atg	atc	aag	gtg	1994
Leu	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys	Pro	Val	Lys	Met	Ile	Lys	Val	
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gct	gtt	tac	ccc	ggg	aac	gtg	ttg	tct	cta	cac	atg	acg	aag	cca	caa	2042
Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ser	Leu	His	Met	Thr	Lys	Pro	Gln	
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Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	
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aaa	agc	ggt	ctt	ctc	cga	gca	gac	gga	gga	gat	gga	aac	ctc	ccg	ttc	2282
Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Gly	Gly	Asp	Gly	Asn	Leu	Pro	Phe	
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ccg	aag	gtc	ctt	atc	gac	ggt	cca	tac	ggt	gct	ccc	gca	caa	gac	tac	2330
Pro	Lys	Val	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	
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aag	aaa	tac	gac	gtg	gta	ctc	ctc	gta	ggt	ctc	ggc	att	gga	gcc	acg	2378
Lys	Lys	Tyr	Asp	Val	Val	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	
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Sequence Listing

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gac cgc gac agc gac att gag aac aat aac agt aac aac aat agt aaa 2474
Asp Arg Asp Ser Asp Ile Glu Asn Asn Asn Ser Asn Asn Asn Ser Lys
770 775 780
ggg ttt aag aca agg aaa gct tat ttc tac tgg gtg act agg gaa caa 2522
Gly Phe Lys Thr Arg Lys Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln
785 790 795
gga tca ttc gag tgg ttc aag gga ata atg gac gag att tcg gag tta 2570
Gly Ser Phe Glu Trp Phe Lys Gly Ile Met Asp Glu Ile Ser Glu Leu
800 805 810
gac gag gaa gga atc atc gag ctt cac aat tat tgc acg agt gtg tac 2618
Asp Glu Glu Gly Ile Ile Glu Leu His Asn Tyr Cys Thr Ser Val Tyr
815 820 825
gag gaa ggt gat gca aga gtg gct ctc att gcc atg ctt cag tcg ttg 2666
Glu Glu Gly Asp Ala Arg Val Ala Leu Ile Ala Met Leu Gln Ser Leu
830 835 840 845
caa cac gct aag aac ggt gtg gat gtt gtg tcg ggt aca cgt gtc aag 2714
Gln His Ala Lys Asn Gly Val Asp Val Val Ser Gly Thr Arg Val Lys
850 855 860
tcc cac ttc gct aaa cct aac tgg aga caa gtc tac aag aag atc gct 2762
Ser His Phe Ala Lys Pro Asn Trp Arg Gln Val Tyr Lys Lys Ile Ala
865 870 875
gtt caa cat ccc ggc aaa aga ata gga gtc ttc tac tgt gga atg cca 2810
Val Gln His Pro Gly Lys Arg Ile Gly Val Phe Tyr Cys Gly Met Pro
880 885 890
gga atg ata aag gaa tta aaa aat cta gct ttg gat ttt tct cga aag 2858
Gly Met Ile Lys Glu Leu Lys Asn Leu Ala Leu Asp Phe Ser Arg Lys
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Thr Thr Thr Lys Phe Asp Phe His Lys Glu Asn Phe
910 915 920
atatacgttg tagaaaaata aaacaagaaa caactataca aataaatatt tatttttaaat 2964
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<211> 921

<212> PRT

<213> Arabidopsis thaliana

<400> 14

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Ser Asp Arg Gly Ala Phe Ser Gly Pro Leu Gly Arg Pro Lys Arg Ala
      35      40      45
Ser Lys Lys Asn Ala Arg Phe Ala Asp Asp Leu Pro Lys Arg Ser Asn
      50      55      60
Ser Val Ala Gly Gly Arg Gly Asp Asp Asp Glu Tyr Val Glu Ile Thr
      65      70      75      80
Leu Asp Ile Arg Asp Ser Val Ala Val His Ser Val Gln Gln Ala
      85      90      95
Ala Gly Gly Gly Gly His Leu Glu Asp Pro Glu Leu Ala Leu Leu Thr
      100      105      110
Lys Lys Thr Leu Glu Ser Ser Leu Asn Asn Thr Thr Ser Leu Ser Phe
      115      120      125
Phe Arg Ser Thr Ser Ser Arg Ile Lys Asn Ala Ser Arg Glu Leu Arg
      130      135      140
Arg Val Phe Ser Arg Arg Pro Ser Pro Ala Val Arg Arg Phe Asp Arg
      145      150      155      160
Thr Ser Ser Ala Ala Ile His Ala Leu Lys Gly Leu Lys Phe Ile Ala
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Sequence Listing

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Ala	Leu	Ala	Arg	Arg	Asn	Asn	Val	Ser	Gly	Asp	Ala	Ile	Thr	Lys	Glu
225					230					235					240
Gln	Leu	Arg	Ile	Phe	Trp	Glu	Gln	Ile	Ser	Asp	Glu	Ser	Phe	Asp	Ala
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Lys	Leu	Gln	Val	Phe	Phe	Asp	Met	Val	Asp	Lys	Asp	Glu	Asp	Gly	Arg
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Val	Thr	Glu	Glu	Glu	Val	Ala	Glu	Ile	Ile	Ser	Leu	Ser	Ala	Ser	Ala
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Asn	Lys	Leu	Ser	Asn	Ile	Gln	Lys	Gln	Ala	Lys	Glu	Tyr	Ala	Ala	Leu
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Ile	Met	Glu	Glu	Leu	Asp	Pro	Asp	Asn	Ala	Gly	Phe	Ile	Met	Ile	Glu
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Gly	Asp	Ser	Arg	Ile	Leu	Ser	Gln	Met	Leu	Ser	Gln	Lys	Leu	Arg	Pro
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385					390					395					400
Lys	Ala	Ala	Tyr	Gly	Val	Met	Gly	Tyr	Cys	Val	Cys	Val	Ala	Lys	Gly
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Gly	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro	Val
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Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Lys	Leu	Gly	Thr
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Val	Val	Pro	Phe	Asp	Asp	Ser	Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Ser
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Pro	Asn	Phe	Leu	Lys	Lys	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Thr
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His	His	Leu	Phe	Ile	Ile	Val	Tyr	Ala	Leu	Leu	Ile	Val	His	Gly	Ile
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Lys	Leu	Tyr	Leu	Thr	Lys	Ile	Trp	Tyr	Gln	Lys	Thr	Thr	Trp	Met	Tyr
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Leu	Ala	Val	Pro	Ile	Leu	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Leu	Arg	Ala
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Phe	Arg	Ser	Ser	Ile	Lys	Pro	Val	Lys	Met	Ile	Lys	Val	Ala	Val	Tyr
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Tyr	Lys	Ser	Gly	Gln	Phe	Met	Leu	Val	Asn	Cys	Arg	Ala	Val	Ser	Pro
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Sequence Listing

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Lys	Ser	Thr	Leu	Gly	Ser	Ser	Leu	Val	Arg	Asn	Ala	Ser	Ser	Arg	Ile																		
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Val	Arg	Glu	Ile	Ile	Gly	Leu	Ser	Ala	Ser	Ala	Asn	Arg	Leu	Ser	Thr																		
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atc	cag	aaa	caa	gct	gat	gaa	tac	gca	gca	atg	atc	atg	gaa	gag	ttg	1215																	
Ile	Gln	Lys	Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Met	Ile	Met	Glu	Glu	Leu																		
										290											295											300	
gat	cct	aac	aac	ctc	gga	tac	att	atg	att	gag	aac	ttg	gaa	atg	ctt	1263																	
Asp	Pro	Asn	Asn	Leu	Gly	Tyr	Ile	Met	Ile	Glu	Asn	Leu	Glu	Met	Leu																		
										305											310											315	
tta	ctg	caa	gca	cca	aat	caa	tca	gtg	caa	aga	gga	ggc	gaa	agt	cgg	1311																	
Leu	Leu	Gln	Ala	Pro	Asn	Gln	Ser	Val	Gln	Arg	Gly	Gly	Glu	Ser	Arg																		
										320											325											330	
aac	ttg	agt	caa	atg	cta	agt	caa	aaa	cta	aag	cat	aca	caa	gag	aga	1359																	
Asn	Leu	Ser	Gln	Met	Leu	Ser	Gln	Lys	Leu	Lys	His	Thr	Gln	Glu	Arg																		
										335											340											345	
aat	cca	ata	gta	aga	tgg	tac	aag	agt	ttc	atg	tac	ttt	ttg	ctg	gat	1407																	
Asn	Pro	Ile	Val	Arg	Trp	Tyr	Lys	Ser	Phe	Met	Tyr	Phe	Leu	Leu	Asp																		
										350											355											360	
aat	tgg	caa	aga	gtt	tgg	gta	ttg	tta	ctg	tgg	att	gga	att	atg	gct	1455																	
Asn	Trp	Gln	Arg	Val	Trp	Val	Leu	Leu	Leu	Trp	Ile	Gly	Ile	Met	Ala																		
										370											375											380	
ggt	cta	ttt	aca	tgg	aaa	tat	ata	cag	tat	aaa	gaa	aaa	gct	gca	tat	1503																	
Gly	Leu	Phe	Thr	Trp	Lys	Tyr	Ile	Gln	Tyr	Lys	Glu	Lys	Ala	Ala	Tyr																		
										385											390											395	
aaa	gtc	atg	ggt	ccc	tgt	gtg	tgt	ttt	gcc	aaa	ggt	gct	gct	gaa	aca	1551																	
Lys	Val	Met	Gly	Pro	Cys	Val	Cys	Phe	Ala	Lys	Gly	Ala	Ala	Glu	Thr																		
										400											405											410	
ctc	aag	ctc	aac	atg	gca	att	att	tta	ttt	ccg	gtt	tgc	aga	aac	acg	1599																	
Leu	Lys	Leu	Asn	Met	Ala	Ile	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr																		

Sequence Listing

415	atc	aca	tgg	ctt	cga	aat	acc	aga	tta	ggt	gct	gct	cct	ttt	1647
	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Leu	Gly	Ala	Ala	Val	Pro	Phe
430	gat	gat	aac	ctt	aat	ttt	cac	aaa	gtg	ata	gca	gtg	gca	att	gct
	Asp	Asp	Asn	Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Val	Ala	Ile	Ala
440	ggg	gtt	gga	ata	cac	gga	cta	tct	cac	ttg	aca	tgt	gat	ttt	cct
	Gly	Val	Gly	Ile	His	Gly	Leu	Ser	His	Leu	Thr	Cys	Asp	Phe	Pro
450	ctt	tta	aat	gct	agt	gaa	gaa	gaa	tat	gaa	cca	atg	aag	tac	tat
	Leu	Leu	Asn	Ala	Ser	Glu	Glu	Glu	Tyr	Glu	Pro	Met	Lys	Tyr	Tyr
460	gga	gat	cag	cca	gaa	agc	tat	tgg	tgg	ttt	ata	aaa	gga	gta	gaa
	Gly	Asp	Gln	Pro	Glu	Ser	Tyr	Trp	Trp	Phe	Ile	Lys	Gly	Val	Glu
470	gta	act	gga	att	ata	atg	gtg	gtt	tta	atg	gca	ata	gca	ttt	act
	Val	Thr	Gly	Ile	Ile	Met	Val	Val	Leu	Met	Ala	Ile	Ala	Phe	Thr
480	gca	acc	cca	tgg	ttt	aga	agg	aat	aga	gtt	agt	ttg	cca	aaa	cca
	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Asn	Arg	Val	Ser	Leu	Pro	Lys	Pro
490	cac	aaa	ctc	act	gga	tnt	aat	gcc	ttt	tgg	tac	tct	cac	cat	ctc
	His	Lys	Leu	Thr	Gly	Xaa	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu
500	gtt	atc	gtc	tac	act	ctg	ttc	att	gtg	cat	ggt	gaa	aag	cta	tac
	Val	Ile	Val	Tyr	Thr	Leu	Phe	Ile	Val	His	Gly	Glu	Lys	Leu	Tyr
510	acc	aaa	gat	tgg	tac	aag	aga	acc	gac	atg	gat	gta	ctt	tta	act
	Thr	Lys	Asp	Trp	Tyr	Lys	Arg	Thr	Asp	Met	Asp	Val	Leu	Leu	Thr
520	cca	atc	ata	ctc	tat	gct	agt	gaa	agg	ttg	att	agg	gca	ttc	agg
	Pro	Ile	Ile	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Ile	Arg	Ala	Phe	Arg
530	agc	att	aaa	gct	gtt	aag	att	ttg	aag	gtg	gca	gta	tat	cca	gga
	Ser	Ile	Lys	Ala	Val	Lys	Ile	Leu	Lys	Val	Ala	Val	Tyr	Pro	Gly
540	gtg	ttg	gca	ctt	cac	atg	tca	aaa	cca	cag	ggc	tac	aaa	tac	aaa
	Val	Leu	Ala	Leu	His	Met	Ser	Lys	Pro	Gln	Gly	Tyr	Lys	Tyr	Lys
550	ggg	caa	tac	atg	ttt	gtc	aac	tgt	gct	gca	gtt	tct	cca	ttt	gag
	Gly	Gln	Tyr	Met	Phe	Val	Asn	Cys	Ala	Ala	Val	Ser	Pro	Phe	Glu
560	cat	cca	ttt	tca	att	act	tcg	gcc	cca	gga	gat	gac	tat	ctc	agt
	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser
570	cat	att	cga	act	ctt	ggt	gat	tgg	acc	agg	caa	ctt	aaa	act	gtt
	His	Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Arg	Gln	Leu	Lys	Thr	Val
580	tcc	gag	gtt	tgc	cag	cca	cca	cct	aat	gga	aaa	agt	gga	ctc	ctc
	Ser	Glu	Val	Cys	Gln	Pro	Pro	Pro	Asn	Gly	Lys	Ser	Gly	Leu	Arg
590	gct	gac	tac	ttg	caa	gga	gag	aat	aat	cct	aat	ttc	cca	agg	gtg
	Ala	Asp	Tyr	Leu	Gln	Gly	Glu	Asn	Asn	Pro	Asn	Phe	Pro	Arg	Val
600	ata	gat	gga	cca	tat	gga	gca	cca	gca	caa	gac	tac	aag	aaa	tat
	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Lys	Lys	Tyr
610	gtg	gtt	ttg	ttg	gta	ggt	ctt	gga	att	gga	gct	aca	cca	atg	atc
	Val	Val	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Met	Ile
620	att	gtt	aaa	gac	att	gtc	aac	aac	atg	aag	gca	atg	gac	gaa	gaa
	Ile	Val	Lys	Asp	Ile	Val	Asn	Asn	Met	Lys	Ala	Met	Asp	Glu	Glu

Sequence Listing

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750          755          760          765
aat tcc ttg gaa gat gga cac aat aat aat atg gca cca aat tct agc 2655
Asn Ser Leu Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser
770          775          780
ccc aat att gca aaa aat aag ggt aat aaa tca ggt tca gca agt gga 2703
Pro Asn Ile Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly
785          790          795
gga aat aat ttc aat aca agg aga gca tat ttc tat tgg gtt act aga 2751
Gly Asn Asn Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg
800          805
gaa caa ggt tca ttt gat tgg ttc aaa ggt ata atg aat gaa gct gct 2799
Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala
815          820          825
gaa atg gac cat aag gga gta att gaa atg cat aat tat tgt act agt 2847
Glu Met Asp His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser
830          835          840          845
gtt tat gaa gaa ggt gat gct cgt tct gct ctt att act atg ctt cag 2895
Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln
850          855          860
tct ctt cac cat gcc aaa aat ggt gtt gac att gtc tct ggc acc aga 2943
Ser Leu His His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg
865          870          875
gtt aag tca cat ttt gct aaa cct aat tgg cgt aat gtc tac aaa cgc 2991
Val Lys Ser His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg
880          885          890          895
att gct ctc aac cac cct gag gct aaa gtt ggg gtc ttc tat tgt ggg 3039
Ile Ala Leu Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly
900          905
gca cca gca ctg acc aaa gaa cta aga caa cac gcc ttg gat ttt tca 3087
Ala Pro Ala Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser
910          915          920          925
cac aag aca tct acc aag ttt gat ttc cat aaa gaa aat ttt 3129
His Lys Thr Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
930          935
tgagcaaaga atagaccatt aagcagagca ttaaaatttc atcaaaacag ctaaggacac 3189
aggttgtttt atagaagtct accaactctc cctattgtgt acagataatg ttgcacttca 3249
agttgatata tagttgtggt tgtgatgcta gtatattaca aaataataag attattttta 3309
ttttagtagtaa aaaaaaaaaa aaaaaaaaaa 3338
<210> 16
<211> 939
<212> PRT
<213> Nicotiana tabacum
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Met Gln Asn Ser Glu Asn His His Pro His His Gln His His His Ser
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Asp Thr Glu Ile Ile Gly Asn Asp Arg Ala Ser Tyr Ser Gly Pro Leu
20 25 30
Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala Arg Phe Asn
35 40 45
Ile Pro Glu Ser Thr Asp Ile Gly Thr Ser Val Gly Thr Gly Gly Lys
50 55 60
Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val Arg Glu Asp
65 70 75 80
Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp Asp Val Glu
85 90 95
Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys Lys Ser Thr
100 105 110
Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile Arg Gln Val
115 120 125
Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg Pro Ile Pro
130 135 140
Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala His Ala Leu Lys
145 150 155 160

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Sequence Listing

Gly	Leu	Lys	Phe	Ile	Ser	Lys	Thr	Asp	Gly	Gly	Ala	Gly	Trp	Ala	Ala	
				165					170					175		
Val	Glu	Lys	Arg	Phe	Asp	Glu	Ile	Thr	Ala	Ser	Thr	Thr	Gly	Leu	Leu	
			180					185					190			
Pro	Arg	Ala	Lys	Phe	Gly	Glu	Cys	Ile	Gly	Met	Asn	Lys	Glu	Ser	Lys	
		195					200					205				
Glu	Phe	Ala	Val	Glu	Leu	Tyr	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile	
	210					215					220					
Thr	Thr	Asp	Ser	Ile	Asn	Lys	Ala	Gln	Leu	Lys	Glu	Phe	Trp	Asp	Gln	
225					230					235					240	
Val	Ala	Asp	Gln	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Thr	Phe	Phe	Asp	Met	
				245					250					255		
Val	Asp	Lys	Asp	Ala	Asp	Gly	Arg	Ile	Thr	Glu	Glu	Glu	Val	Arg	Glu	
			260					265					270			
Ile	Ile	Gly	Leu	Ser	Ala	Ser	Ala	Asn	Arg	Leu	Ser	Thr	Ile	Gln	Lys	
		275					280					285				
Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Met	Ile	Met	Glu	Glu	Leu	Asp	Pro	Asn	
	290					295					300					
Asn	Leu	Gly	Tyr	Ile	Met	Ile	Glu	Asn	Leu	Glu	Met	Leu	Leu	Leu	Gln	
305					310					315					320	
Ala	Pro	Asn	Gln	Ser	Val	Gln	Arg	Gly	Gly	Glu	Ser	Arg	Asn	Leu	Ser	
				325					330					335		
Gln	Met	Leu	Ser	Gln	Lys	Leu	Lys	His	Thr	Gln	Glu	Arg	Asn	Pro	Ile	
			340					345					350			
Val	Arg	Trp	Tyr	Lys	Ser	Phe	Met	Tyr	Phe	Leu	Leu	Asp	Asn	Trp	Gln	
		355					360					365				
Arg	Val	Trp	Val	Leu	Leu	Leu	Trp	Ile	Gly	Ile	Met	Ala	Gly	Leu	Phe	
	370					375					380					
Thr	Trp	Lys	Tyr	Ile	Gln	Tyr	Lys	Glu	Lys	Ala	Ala	Tyr	Lys	Val	Met	
385					390					395					400	
Gly	Pro	Cys	Val	Cys	Phe	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Leu	
				405					410					415		
Asn	Met	Ala	Ile	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	
			420					425					430			
Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly	Ala	Ala	Val	Pro	Phe	Asp	Asp	Asn	
		435					440					445				
Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Val	Ala	Ile	Ala	Leu	Gly	Val	Gly	
	450					455					460					
Ile	His	Gly	Leu	Ser	His	Leu	Thr	Cys	Asp	Phe	Pro	Arg	Leu	Leu	Asn	
465					470					475					480	
Ala	Ser	Glu	Glu	Glu	Tyr	Glu	Pro	Met	Lys	Tyr	Tyr	Phe	Gly	Asp	Gln	
				485					490					495		
Pro	Glu	Ser	Tyr	Trp	Trp	Phe	Ile	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	
			500					505					510			
Ile	Ile	Met	Val	Val	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	
		515					520					525				
Trp	Phe	Arg	Arg	Asn	Arg	Val	Ser	Leu	Pro	Lys	Pro	Phe	His	Lys	Leu	
	530					535					540					
Thr	Gly	Xaa	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Phe	Val	Ile	Val	
545					550					555					560	
Tyr	Thr	Leu	Phe	Ile	Val	His	Gly	Glu	Lys	Leu	Tyr	Ile	Thr	Lys	Asp	
				565					570					575		
Trp	Tyr	Lys	Arg	Thr	Asp	Met	Asp	Val	Leu	Leu	Thr	Ile	Pro	Ile	Ile	
			580					585					590			
Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Ile	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys	
		595					600					605				
Ala	Val	Lys	Ile	Leu	Lys	Val	Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala	
	610					615					620					
Leu	His	Met	Ser	Lys	Pro	Gln	Gly	Tyr	Lys	Tyr	Lys	Ser	Gly	Gln	Tyr	
625					630					635					640	
Met	Phe	Val	Asn	Cys	Ala	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	
				645					650					655		
Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Val	His	Ile	Arg	

Sequence Listing

Thr	Leu	Gly	660	Trp	Thr	Arg	Gln	665	Leu	Lys	Thr	Val	Phe	670	Ser	Glu	Val
		675	Asp				680	Lys					685				
Cys	Gln	Pro	Pro	Pro	Asn	Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Tyr		
	690					695					700						
Leu	Gln	Gly	Glu	Asn	Asn	Pro	Asn	Phe	Pro	Arg	Val	Leu	Ile	Asp	Gly		
705				710						715					720		
Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Lys	Lys	Tyr	Glu	Val	Val	Leu		
				725					730					735			
Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Met	Ile	Ser	Ile	Val	Lys		
			740					745					750				
Asp	Ile	Val	Asn	Asn	Met	Lys	Ala	Met	Asp	Glu	Glu	Glu	Asn	Ser	Leu		
		755					760					765					
Glu	Asp	Gly	His	Asn	Asn	Asn	Met	Ala	Pro	Asn	Ser	Ser	Pro	Asn	Ile		
	770					775					780						
Ala	Lys	Asn	Lys	Gly	Asn	Lys	Ser	Gly	Ser	Ala	Ser	Gly	Gly	Asn	Asn		
785					790					795					800		
Phe	Asn	Thr	Arg	Arg	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln	Gly		
				805					810					815			
Ser	Phe	Asp	Trp	Phe	Lys	Gly	Ile	Met	Asn	Glu	Ala	Ala	Glu	Met	Asp		
			820					825					830				
His	Lys	Gly	Val	Ile	Glu	Met	His	Asn	Tyr	Cys	Thr	Ser	Val	Tyr	Glu		
		835					840					845					
Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Thr	Met	Leu	Gln	Ser	Leu	His		
	850					855					860						
His	Ala	Lys	Asn	Gly	Val	Asp	Ile	Val	Ser	Gly	Thr	Arg	Val	Lys	Ser		
865					870					875					880		
His	Phe	Ala	Lys	Pro	Asn	Trp	Arg	Asn	Val	Tyr	Lys	Arg	Ile	Ala	Leu		
				885					890					895			
Asn	His	Pro	Glu	Ala	Lys	Val	Gly	Val	Phe	Tyr	Cys	Gly	Ala	Pro	Ala		
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Leu	Thr	Lys	Glu	Leu	Arg	Gln	His	Ala	Leu	Asp	Phe	Ser	His	Lys	Thr		
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<210> 17

<211> 2532

<212> DNA

<213> Oryza sativa

<220>

<221> CDS

<222> (1)..(2529)

<223> coding for NADPH oxidase

<400> 17

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1				5				10					15			
ggg	ttg	ccg	agg	ccg	ccg	ggg	gcg	ggg	gcg	ggt	gcg	gcg	gcg	ggc	ggg	96
Gly	Leu	Pro	Arg	Pro	Pro	Gly	Ala	Gly	Ala	Gly	Ala	Ala	Ala	Gly	Gly	
			20					25					30			
ttc	gcg	cgg	ggg	ctg	atg	aag	cag	ccg	tcg	cgg	ctg	gcg	tcc	ggg	gtg	144
Phe	Ala	Arg	Gly	Leu	Met	Lys	Gln	Pro	Ser	Arg	Leu	Ala	Ser	Gly	Val	
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agg	cag	ttc	gcg	tcg	agg	gtg	tcg	atg	aag	gtg	ccg	gag	ggg	gtg	ggg	192
Arg	Gln	Phe	Ala	Ser	Arg	Val	Ser	Met	Lys	Val	Pro	Glu	Gly	Val	Gly	
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ggg	atg	cgg	ccc	ggt	ggc	ggg	agg	atg	acg	cgg	atg	cag	tcc	agc	gcg	240
Gly	Met	Arg	Pro	Gly	Gly	Gly	Arg	Met	Thr	Arg	Met	Gln	Ser	Ser	Ala	
				70						75					80	
cag	gtg	ggg	ctc	cgg	ggg	ctc	cgc	ttc	ctc	gac	aag	acg	tcc	ggc	ggg	288
Gln	Val	Gly	Leu	Arg	Gly	Leu	Arg	Phe	Leu	Asp	Lys	Thr	Ser	Gly	Gly	
				85					90					95		

Sequence Listing

aag	gag	ggg	tgg	aag	tcc	gtc	gag	cgc	cgc	ttc	gac	gag	atg	aac	cgc	336
Lys	Glu	Gly	Trp	Lys	Ser	Val	Glu	Arg	Arg	Phe	Asp	Glu	Met	Asn	Arg	
			100					105					110			
aac	ggc	cgc	ctc	ccc	aag	gag	agc	ttc	ggc	aag	tgc	atc	ggc	atg	ggg	384
Asn	Gly	Arg	Leu	Pro	Lys	Glu	Ser	Phe	Gly	Lys	Cys	Ile	Gly	Met	Gly	
		115					120					125				
gac	tcc	aag	gag	ttc	gcc	ggc	gag	ctg	ttc	gtg	gcg	ctg	gcg	cgg	cgg	432
Asp	Ser	Lys	Glu	Phe	Ala	Gly	Glu	Leu	Phe	Val	Ala	Leu	Ala	Arg	Arg	
		130				135					140					
agg	aac	ctg	gag	ccg	gag	gac	ggc	atc	acc	aag	gag	cag	ctc	aag	gag	480
Arg	Asn	Leu	Glu	Pro	Glu	Asp	Gly	Ile	Thr	Lys	Glu	Gln	Leu	Lys	Glu	
					150				155						160	
ttc	tgg	gag	gag	atg	acc	gac	cag	aac	ttc	gac	tcg	cgg	ctt	cgc	att	528
Phe	Trp	Glu	Glu	Met	Thr	Asp	Gln	Asn	Phe	Asp	Ser	Arg	Leu	Arg	Ile	
				165					170					175		
ttc	ttt	gac	atg	tgc	gac	aag	aat	ggc	gat	ggg	atg	ctc	acg	gaa	gat	576
Phe	Phe	Asp	Met	Cys	Asp	Lys	Asn	Gly	Asp	Gly	Met	Leu	Thr	Glu	Asp	
			180					185					190			
gag	gtc	aag	gag	gtt	att	ata	ctg	agt	gcg	tcg	gcg	aac	aag	ctg	gcg	624
Glu	Val	Lys	Glu	Val	Ile	Ile	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ala	
		195					200					205				
aag	ctg	aag	gga	cac	gcg	gcg	acg	tac	gcg	tcg	ctg	atc	atg	gag	gag	672
Lys	Leu	Lys	Gly	His	Ala	Ala	Thr	Tyr	Ala	Ser	Leu	Ile	Met	Glu	Glu	
		210			215						220					
ctg	gac	ccg	gac	gac	cgc	ggg	tac	atc	gag	atc	tgg	cag	ctg	gag	acg	720
Leu	Asp	Pro	Asp	Asp	Arg	Gly	Tyr	Ile	Glu	Ile	Trp	Gln	Leu	Glu	Thr	
					230				235						240	
ctg	ctg	cgc	ggc	atg	gtg	agc	gcg	cag	gcg	gcg	ccg	gag	aag	atg	aag	768
Leu	Leu	Arg	Gly	Met	Val	Ser	Ala	Gln	Ala	Ala	Pro	Glu	Lys	Met	Lys	
				245				250						255		
cgg	acg	acg	tcg	agc	ctc	gcg	agg	acg	atg	atc	ccg	tcg	cgg	tac	cgg	816
Arg	Thr	Thr	Ser	Ser	Leu	Ala	Arg	Thr	Met	Ile	Pro	Ser	Arg	Tyr	Arg	
			260					265					270			
agc	ccg	ctg	aag	cgg	cac	gtg	tcc	agg	acg	gtg	gac	ttc	gtg	cac	gag	864
Ser	Pro	Leu	Lys	Arg	His	Val	Ser	Arg	Thr	Val	Asp	Phe	Val	His	Glu	
			275				280					285				
aac	tgg	aag	cgg	atc	tgg	ctc	gtc	gcg	ctg	tgg	ctc	gcc	gtc	aac	gtc	912
Asn	Trp	Lys	Arg	Ile	Trp	Leu	Val	Ala	Leu	Trp	Leu	Ala	Val	Asn	Val	
		290				295					300					
ggc	ctc	ttc	gcc	tac	aag	ttc	gag	cag	tac	gag	cgg	cgc	gcc	gcg	ttc	960
Gly	Leu	Phe	Ala	Tyr	Lys	Phe	Glu	Gln	Tyr	Glu	Arg	Arg	Ala	Ala	Phe	
				310					315						320	
cag	gtg	atg	ggc	cac	tgc	gtg	tgc	gtg	gcc	aag	ggc	gcc	gcc	gag	gtg	1008
Gln	Val	Met	Gly	His	Cys	Val	Cys	Val	Ala	Lys	Gly	Ala	Ala	Glu	Val	
				325				330						335		
ctc	aag	ctc	aac	atg	gcg	ctc	atc	ctc	ctc	ccc	gtg	tgc	cgg	aac	acg	1056
Leu	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	
			340					345					350			
ctc	acc	acg	ctc	agg	tcc	acg	gcg	ctc	agc	cac	gtc	atc	ccc	ttc	gac	1104
Leu	Thr	Thr	Leu	Arg	Ser	Thr	Ala	Leu	Ser	His	Val	Ile	Pro	Phe	Asp	
			355				360					365				
gac	aac	atc	aac	ttc	cac	aag	gtg	atc	gcg	gcg	acc	atc	gcc	gcc	gcc	1152
Asp	Asn	Ile	Asn	Phe	His	Lys	Val	Ile	Ala	Ala	Thr	Ile	Ala	Ala	Ala	
		370				375					380					
acc	gcc	gtc	cac	acg	ctg	gcg	cac	gtc	acc	tgc	gac	ttc	ccg	agg	ctg	1200
Thr	Ala	Val	His	Thr	Leu	Ala	His	Val	Thr	Cys	Asp	Phe	Pro	Arg	Leu	
					390				395						400	
atc	aac	tgc	ccc	agc	gac	aag	ttc	atg	gcg	acg	ctg	ggg	ccg	aac	ttc	1248
Ile	Asn	Cys	Pro	Ser	Asp	Lys	Phe	Met	Ala	Thr	Leu	Gly	Pro	Asn	Phe	
				405				410						415		
ggg	tac	agg	cag	ccg	acg	tac	gcc	gac	ctg	ctg	gag	agc	gcc	ccc	ggc	1296
Gly	Tyr	Arg	Gln	Pro	Thr	Tyr	Ala	Asp	Leu	Leu	Glu	Ser	Ala	Pro	Gly	
			420					425					430			

Sequence Listing

gtc	acc	ggc	atc	ctc	atg	atc	atc	atc	atg	tcc	ttc	tcc	ttc	acg	ctg	1344
Val	Thr	Gly	Ile	Leu	Met	Ile	Ile	Ile	Met	Ser	Phe	Ser	Phe	Thr	Leu	
		435					440				445					
gcc	acg	cac	tcc	ttc	cgc	cgg	agc	gtc	gtc	aag	ctg	ccg	tcg	ccg	ctg	1392
Ala	Thr	His	Ser	Phe	Arg	Arg	Ser	Val	Val	Lys	Leu	Pro	Ser	Pro	Leu	
	450					455					460					
cac	cac	ctc	gcc	ggc	ttc	aac	gcc	ttc	tgg	tac	gcg	cac	cac	ctc	ctg	1440
His	His	Leu	Ala	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ala	His	His	Leu	Leu	
	465				470					475					480	
gtg	ctc	gcc	tac	gtc	ctc	ctc	gtc	gtg	cac	tcc	tac	ttc	ata	ttc	ctc	1488
Val	Leu	Ala	Tyr	Val	Leu	Leu	Val	Val	His	Ser	Tyr	Phe	Ile	Phe	Leu	
				485					490					495		
acc	agg	gag	tgg	tac	aag	aaa	acg	aca	tgg	atg	tac	ctg	ata	gtc	cca	1536
Thr	Arg	Glu	Trp	Tyr	Lys	Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ile	Val	Pro	
		500						505					510			
gtg	ctc	ttc	tat	gca	tgc	gag	aga	acg	atc	aga	aaa	gtt	cga	gag	aac	1584
Val	Leu	Phe	Tyr	Ala	Cys	Glu	Arg	Thr	Ile	Arg	Lys	Val	Arg	Glu	Asn	
		515					520					525				
aac	tac	cgc	gtg	agc	atc	gtc	aag	gca	gcg	att	tac	cca	gga	aat	gtg	1632
Asn	Tyr	Arg	Val	Ser	Ile	Val	Lys	Ala	Ala	Ile	Tyr	Pro	Gly	Asn	Val	
	530					535					540					
ctc	tct	ctt	cac	atg	aag	aag	ccg	ccg	ggt	ttc	aag	tac	aag	agc	ggg	1680
Leu	Ser	Leu	His	Met	Lys	Lys	Pro	Pro	Gly	Phe	Lys	Tyr	Lys	Ser	Gly	
	545				550					555					560	
atg	tac	ctg	ttt	gtg	aag	tgc	cct	gat	gtc	tct	cct	ttc	gaa	tgg	cat	1728
Met	Tyr	Leu	Phe	Val	Lys	Cys	Pro	Asp	Val	Ser	Pro	Phe	Glu	Trp	His	
				565					570					575		
ccc	ttc	tcc	atc	act	tct	gca	cct	gga	gat	gac	tac	ctg	agt	gtg	cat	1776
Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Val	His	
			580					585					590			
atc	cgt	aca	cta	ggt	gac	tgg	acg	act	gaa	ctc	aga	aac	ctg	ttt	ggg	1824
Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Thr	Glu	Leu	Arg	Asn	Leu	Phe	Gly	
	595						600					605				
aag	gct	tgc	gag	gca	cag	gtt	act	tct	aag	aag	gct	acc	ctt	tca	aga	1872
Lys	Ala	Cys	Glu	Ala	Gln	Val	Thr	Ser	Lys	Lys	Ala	Thr	Leu	Ser	Arg	
	610					615					620					
ctt	gaa	act	aca	gtt	gtg	gcg	gac	gct	cag	aca	gag	gat	act	agg	ttt	1920
Leu	Glu	Thr	Thr	Val	Val	Ala	Asp	Ala	Gln	Thr	Glu	Asp	Thr	Arg	Phe	
	625				630				635						640	
cct	aag	gtc	ctt	att	gat	ggg	ccc	tat	ggt	gca	ccg	gcg	caa	aac	tac	1968
Pro	Lys	Val	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asn	Tyr	
				645					650					655		
aag	aag	tat	gac	att	ctt	ttg	ctt	att	ggt	ctt	gga	att	ggt	gct	act	2016
Lys	Lys	Tyr	Asp	Ile	Leu	Leu	Leu	Ile	Gly	Leu	Gly	Ile	Gly	Ala	Thr	
			660					665					670			
cct	ttc	atc	agc	att	ctg	aag	gat	ctg	ttg	aac	aac	att	aaa	tcc	aac	2064
Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Asn	Asn	Ile	Lys	Ser	Asn	
		675					680					685				
gaa	gag	gtg	gaa	agc	ata	cat	ggt	tct	gag	ata	ggc	agc	ttc	aag	aac	2112
Glu	Glu	Val	Glu	Ser	Ile	His	Gly	Ser	Glu	Ile	Gly	Ser	Phe	Lys	Asn	
	690					695					700					
aat	ggg	cca	gga	aga	gct	tac	ttc	tac	tgg	gtg	acc	aga	gag	caa	ggg	2160
Asn	Gly	Pro	Gly	Arg	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln	Gly	
	705				710					715					720	
tcc	ttc	gag	tgg	ttt	aaa	gga	gtc	atg	aac	gat	gtc	gct	gaa	agt	gat	2208
Ser	Phe	Glu	Trp	Phe	Lys	Gly	Val	Met	Asn	Asp	Val	Ala	Glu	Ser	Asp	
				725					730					735		
cac	aat	aat	att	ata	gag	atg	cac	aat	tac	ctg	acc	agc	gtg	tat	gaa	2256
His	Asn	Asn	Ile	Ile	Glu	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	Tyr	Glu	
			740					745					750			
gaa	ggc	gac	gca	agg	tca	gct	ttg	att	gcc	atg	gtt	cag	tca	ctt	caa	2304
Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Ala	Met	Val	Gln	Ser	Leu	Gln	
		755					760					765				

Sequence Listing

cat gcc aaa aat ggt gtg gat atc gtc tcc ggc agc agg att cgc aca	2352
His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Ser Arg Ile Arg Thr	
770 775 780	
cat ttt gcg agg cct aac tgg aga aag gtg ttc tct gac ttg gcg aat	2400
His Phe Ala Arg Pro Asn Trp Arg Lys Val Phe Ser Asp Leu Ala Asn	
785 790 795 800	
gcc cac aaa aac tca cgc ata ggt gtt ttc tat tgt gga tcc cct aca	2448
Ala His Lys Asn Ser Arg Ile Gly Val Phe Tyr Cys Gly Ser Pro Thr	
805 810 815	
ctc acg aaa caa ctc aag gat ctt tca aaa gaa ttc agc cag aca acc	2496
Leu Thr Lys Gln Leu Lys Asp Leu Ser Lys Glu Phe Ser Gln Thr Thr	
820 825 830	
aca act aga ttc cac ttc cac aag gaa aac ttt taa	2532
Thr Thr Arg Phe His Phe His Lys Glu Asn Phe	
835 840	

<210> 18

<211> 843

<212> PRT

<213> Oryza sativa

<400> 18

Met Ala Ser Pro Tyr Asp His Gln Ser Pro His Ala Gln His Pro Ser	
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Gly Leu Pro Arg Pro Pro Gly Ala Gly Ala Gly Ala Ala Ala Gly Gly	
20 25 30	
Phe Ala Arg Gly Leu Met Lys Gln Pro Ser Arg Leu Ala Ser Gly Val	
35 40 45	
Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly	
50 55 60	
Gly Met Arg Pro Gly Gly Gly Arg Met Thr Arg Met Gln Ser Ser Ala	
65 70 75 80	
Gln Val Gly Leu Arg Gly Leu Arg Phe Leu Asp Lys Thr Ser Gly Gly	
85 90 95	
Lys Glu Gly Trp Lys Ser Val Glu Arg Arg Phe Asp Glu Met Asn Arg	
100 105 110	
Asn Gly Arg Leu Pro Lys Glu Ser Phe Gly Lys Cys Ile Gly Met Gly	
115 120 125	
Asp Ser Lys Glu Phe Ala Gly Glu Leu Phe Val Ala Leu Ala Arg Arg	
130 135 140	
Arg Asn Leu Glu Pro Glu Asp Gly Ile Thr Lys Glu Gln Leu Lys Glu	
145 150 155 160	
Phe Trp Glu Glu Met Thr Asp Gln Asn Phe Asp Ser Arg Leu Arg Ile	
165 170 175	
Phe Phe Asp Met Cys Asp Lys Asn Gly Asp Gly Met Leu Thr Glu Asp	
180 185 190	
Glu Val Lys Glu Val Ile Ile Leu Ser Ala Ser Ala Asn Lys Leu Ala	
195 200 205	
Lys Leu Lys Gly His Ala Ala Thr Tyr Ala Ser Leu Ile Met Glu Glu	
210 215 220	
Leu Asp Pro Asp Asp Arg Gly Tyr Ile Glu Ile Trp Gln Leu Glu Thr	
225 230 235 240	
Leu Leu Arg Gly Met Val Ser Ala Gln Ala Ala Pro Glu Lys Met Lys	
245 250 255	
Arg Thr Thr Ser Ser Leu Ala Arg Thr Met Ile Pro Ser Arg Tyr Arg	
260 265 270	
Ser Pro Leu Lys Arg His Val Ser Arg Thr Val Asp Phe Val His Glu	
275 280 285	
Asn Trp Lys Arg Ile Trp Leu Val Ala Leu Trp Leu Ala Val Asn Val	
290 295 300	
Gly Leu Phe Ala Tyr Lys Phe Glu Gln Tyr Glu Arg Arg Ala Ala Phe	
305 310 315 320	
Gln Val Met Gly His Cys Val Cys Val Ala Lys Gly Ala Ala Glu Val	
325 330 335	
Leu Lys Leu Asn Met Ala Leu Ile Leu Leu Pro Val Cys Arg Asn Thr	

Sequence Listing

Leu	Thr	Thr	340	Leu	Arg	Ser	Thr	Ala	345	Leu	Ser	His	Val	Ile	350	Pro	Phe	Asp
Asp	Asn	Ile	355	Asn	Phe	His	Lys	Val	360	Ile	Ala	Ala	Thr	Ile	365	Ala	Ala	Ala
Thr	Ala	Val	370	His	Thr	Leu	Ala	His	375	Val	Thr	Cys	Asp	Phe	380	Pro	Arg	Leu
385	Ile	Asn	Cys	Pro	Ser	Asp	Lys	Phe	390	Met	Ala	Thr	Leu	Gly	400	Pro	Asn	Phe
Gly	Tyr	Arg	Gln	Pro	Thr	Tyr	Ala	Asp	405	Leu	Leu	Glu	Ser	Ala	415	Pro	Gly	
Val	Thr	Gly	420	Ile	Leu	Met	Ile	Ile	425	Met	Ser	Phe	Ser	Phe	430	Thr	Leu	
Ala	Thr	His	435	Ser	Phe	Arg	Arg	Ser	440	Val	Val	Lys	Leu	Pro	445	Ser	Pro	Leu
His	His	Leu	450	Ala	Gly	Phe	Asn	Ala	455	Phe	Trp	Tyr	Ala	His	460	His	Leu	Leu
465	Val	Leu	Ala	Tyr	Val	Leu	Leu	Val	470	Val	His	Ser	Tyr	Phe	475	Ile	Phe	Leu
Thr	Arg	Glu	485	Trp	Tyr	Lys	Lys	Thr	490	Trp	Met	Tyr	Leu	Ile	495	Val	Pro	
Val	Leu	Phe	500	Tyr	Ala	Cys	Glu	Arg	505	Thr	Ile	Arg	Lys	Val	510	Arg	Glu	Asn
Asn	Tyr	Arg	515	Val	Ser	Ile	Val	Lys	520	Ala	Ala	Ile	Tyr	Pro	525	Gly	Asn	Val
Leu	Ser	Leu	530	His	Met	Lys	Lys	Pro	535	Pro	Gly	Phe	Lys	Tyr	540	Lys	Ser	Gly
545	Met	Tyr	Leu	Phe	Val	Lys	Cys	Pro	550	Asp	Val	Ser	Pro	Phe	555	Glu	Trp	His
Pro	Phe	Ser	565	Ile	Thr	Ser	Ala	Pro	570	Gly	Asp	Asp	Tyr	Leu	575	Ser	Val	His
Ile	Arg	Thr	580	Leu	Gly	Asp	Trp	Thr	585	Thr	Glu	Leu	Arg	Asn	590	Leu	Phe	Gly
Lys	Ala	Cys	595	Glu	Ala	Gln	Val	Thr	600	Ser	Lys	Lys	Ala	Thr	605	Leu	Ser	Arg
Leu	Glu	Thr	610	Thr	Val	Val	Ala	Asp	615	Ala	Gln	Thr	Glu	Asp	620	Thr	Arg	Phe
625	Pro	Lys	Val	Leu	Ile	Asp	Gly	Pro	630	Tyr	Gly	Ala	Pro	Ala	635	Gln	Asn	Tyr
Lys	Lys	Tyr	645	Asp	Ile	Leu	Leu	Leu	650	Ile	Gly	Leu	Gly	Ile	655	Gly	Ala	Thr
Pro	Phe	Ile	660	Ser	Ile	Leu	Lys	Asp	665	Leu	Leu	Asn	Asn	Ile	670	Lys	Ser	Asn
Glu	Glu	Val	675	Glu	Ser	Ile	His	Gly	680	Ser	Glu	Ile	Gly	Ser	685	Phe	Lys	Asn
Asn	Gly	Pro	690	Gly	Arg	Ala	Tyr	Phe	695	Tyr	Trp	Val	Thr	Arg	700	Glu	Gln	Gly
705	Ser	Phe	Glu	Trp	Phe	Lys	Gly	Val	710	Met	Asn	Asp	Val	Ala	715	Glu	Ser	Asp
His	Asn	Asn	725	Ile	Glu	Met	His	Asn	730	Tyr	Leu	Thr	Ser	Val	735	Tyr	Glu	
Glu	Gly	Asp	740	Ala	Arg	Ser	Ala	Leu	745	Ile	Ala	Met	Val	Gln	750	Ser	Leu	Gln
His	Ala	Lys	755	Asn	Gly	Val	Asp	Ile	760	Val	Ser	Gly	Ser	Arg	765	Ile	Arg	Thr
His	Phe	Ala	770	Arg	Pro	Asn	Trp	Arg	775	Lys	Val	Phe	Ser	Asp	780	Leu	Ala	Asn
785	Ala	His	Lys	Asn	Ser	Arg	Ile	Gly	790	Val	Phe	Tyr	Cys	Gly	795	Ser	Pro	Thr
Leu	Thr	Lys	805	Gln	Leu	Lys	Asp	Leu	810	Ser	Lys	Glu	Phe	Ser	815	Gln	Thr	Thr
Thr	Thr	Arg	820	Phe	His	Phe	His	Lys	825	Glu	Asn	Phe			830			
		835						840										

Sequence Listing

<210> 19
 <211> 2604
 <212> DNA
 <213> Arabidopsis thaliana
 <220>
 <221> CDS
 <222> (1)..(2601)
 <223> coding for NADPH oxidase
 <400> 19

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Met Ser Arg Val Ser Phe Glu Val Ser Gly Gly Tyr His Ser Asp Ala	
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gaa gcc gga aac agc gga cca atg agc ggt ggt caa tta cca ccg atc	96
Glu Ala Gly Asn Ser Gly Pro Met Ser Gly Gly Gln Leu Pro Pro Ile	
20 25 30	
tat aaa aaa ccg ggg aac tcc aga ttc act gct gag aac agt cag aga	144
Tyr Lys Lys Pro Gly Asn Ser Arg Phe Thr Ala Glu Asn Ser Gln Arg	
35 40 45	
aca cgt acg gca cca tac gtg gac ctc acg gta gat gta caa gac gat	192
Thr Arg Thr Ala Pro Tyr Val Asp Leu Thr Val Val Gln Asp Asp	
50 55 60	
aca gtc tct gta cat agc ttg aaa atg gaa ggt gga tct agc gtt gaa	240
Thr Val Ser Val His Ser Leu Lys Met Glu Gly Gly Ser Ser Val Glu	
65 70 75 80	
gag agt ccg gag ctt act ttg ctg aaa cga aac cgt ctt gag aag aaa	288
Glu Ser Pro Glu Leu Thr Leu Leu Lys Arg Asn Arg Leu Glu Lys Lys	
85 90 95	
aca acg gtg gtg aaa cgt ttg gcg tct gtt tct cac gag ctt aag cgt	336
Thr Thr Val Val Lys Arg Leu Ala Ser Val Ser His Glu Leu Lys Arg	
100 105 110	
ttg aca tct gtt tct ggt ggt att ggt gga aga aag ccg cct cga ccg	384
Leu Thr Ser Val Ser Gly Gly Ile Gly Gly Arg Lys Pro Pro Arg Pro	
115 120 125	
gct aag tta gac cgg act aaa tcc gcc gcg agt caa gcg ttg aag gga	432
Ala Lys Leu Asp Arg Thr Lys Ser Ala Ala Ser Gln Ala Leu Lys Gly	
130 135 140	
ctt aag ttc att agt aaa acc gac ggt ggc gcc ggt tgg tct gcc gtg	480
Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly Trp Ser Ala Val	
145 150 155 160	
gag aag cgg ttt aat cag att acc gcg act acc ggt gga cta ctt ctt	528
Glu Lys Arg Phe Asn Gln Ile Thr Ala Thr Thr Gly Gly Leu Leu Leu	
165 170 175	
cgg aca aag ttc ggt gaa tgc ata gga atg act tca aag gat ttt gct	576
Arg Thr Lys Phe Gly Glu Cys Ile Gly Met Thr Ser Lys Asp Phe Ala	
180 185 190	
ttg gaa ctg ttt gat gca ttg gct aga aga agg aat ata aca ggg gaa	624
Leu Glu Leu Phe Asp Ala Leu Ala Arg Arg Arg Asn Ile Thr Gly Glu	
195 200 205	
gtg att gat gga gat caa cta aag gag ttt tgg gaa caa att aat gat	672
Val Ile Asp Gly Asp Gln Leu Lys Glu Phe Trp Glu Gln Ile Asn Asp	
210 215 220	
caa agt ttt gat tct cgg ctt aag aca ttc ttt gac atg gtg gat aaa	720
Gln Ser Phe Asp Ser Arg Leu Lys Thr Phe Phe Asp Met Val Asp Lys	
225 230 235 240	
gat gct gat ggt aga ctt aca gaa gac gaa gtt aga gag ttg gag agt	768
Asp Ala Asp Gly Arg Leu Thr Glu Asp Glu Val Arg Glu Leu Glu Ser	
245 250 255	
ctt gag act ctg ctt ttg caa gcg gca aca cag tct gtg ata aca agt	816
Leu Glu Thr Leu Leu Leu Gln Ala Ala Thr Gln Ser Val Ile Thr Ser	
260 265 270	
act ggg gag aga aag aat ctg agt cat atg atg agt cag agg ctt aag	864
Thr Gly Glu Arg Lys Asn Leu Ser His Met Met Ser Gln Arg Leu Lys	

Sequence Listing

cct	acg	275	ttt	aac	cg	aac	ccg	280	ttg	aag	cga	tgg	tac	285	cg	ggt	ctt	aga	912
Pro	Thr		Phe	Asn	Arg	Asn	Pro		Leu	Lys	Arg	Trp	Tyr		Arg	Gly	Leu	Arg	
	290						295							300					
ttc	ttc	ttg	tta	gac	aac	tgg	caa	aga	tgt	tgg	ggt	ata	gtg	cta	tgg				960
Phe	Phe	Leu	Leu	Asp	Asn	Trp	Gln	Arg	Cys	Trp	Val	Ile	Val	Leu	Trp				
305					310					315					320				
ttc	ata	ggt	atg	gct	ata	ctc	ttc	acc	tac	aaa	tat	atc	caa	tac	agg				1008
Phe	Ile	Val	Met	Ala	Ile	Leu	Phe	Thr	Tyr	Lys	Tyr	Ile	Gln	Tyr	Arg				
				325					330					335					
cg	agc	cct	gtg	tat	cca	gtg	atg	gg	gat	tgt	gtg	tgc	atg	gct	aaa				1056
Arg	Ser	Pro	Val	Tyr	Pro	Val	Met	Gly	Asp	Cys	Val	Cys	Met	Ala	Lys				
		340						345					350						
gg	gct	gca	gaa	aca	gtg	aag	ctg	aac	atg	gct	ttg	att	ctc	tta	cct				1104
Gly	Ala	Ala	Glu	Thr	Val	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro				
		355					360						365						
gtt	tgt	aga	aac	acc	atc	aca	tgg	ctt	aga	aat	aag	acc	agg	ttg	gg				1152
Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly				
	370					375					380								
cg	gtt	gtc	cca	ttt	gat	gac	aat	ctc	aac	ttc	cac	aag	gtt	ata	gc				1200
Arg	Val	Val	Pro	Phe	Asp	Asn	Leu	Asn	Phe	His	Lys	Val	Ile	Ala					
	385				390				395					400					
gtg	ggg	att	ata	gtt	gga	gta	acg	atg	cac	gcc	ggg	gca	cat	tta	gc				1248
Val	Gly	Ile	Ile	Val	Gly	Val	Thr	Met	His	Ala	Gly	Ala	His	Leu	Ala				
				405					410					415					
tgt	gat	ttc	ccg	cg	tta	cta	cat	gca	act	cca	gag	gca	tat	agg	cct				1296
Cys	Asp	Phe	Pro	Arg	Leu	Leu	His	Ala	Thr	Pro	Glu	Ala	Tyr	Arg	Pro				
		420						425					430						
tta	aga	cag	ttt	ttt	ggg	gat	gag	caa	cca	aag	agc	tac	tgg	cat	ttt				1344
Leu	Arg	Gln	Phe	Phe	Gly	Asp	Glu	Gln	Pro	Lys	Ser	Tyr	Trp	His	Phe				
		435				440						445							
gta	aac	tcg	gta	gaa	gg	ata	acc	gga	ctt	gtg	atg	gtt	ttg	tta	atg				1392
Val	Asn	Ser	Val	Glu	Gly	Ile	Thr	Gly	Leu	Val	Met	Val	Leu	Leu	Met				
	450					455					460								
gc	att	gca	ttc	aca	cta	gcc	acg	cct	tgg	ttc	aga	aga	ggg	aag	cta				1440
Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Gly	Lys	Leu				
	465				470				475					480					
aac	tat	ctt	cca	gga	cca	tta	aag	aaa	cta	gct	agc	ttc	aat	gcc	ttc				1488
Asn	Tyr	Leu	Pro	Gly	Pro	Leu	Lys	Lys	Leu	Ala	Ser	Phe	Asn	Ala	Phe				
				485				490						495					
tgg	tac	act	cat	cat	ttg	ttt	gtc	ata	gtc	tac	att	ctt	ctt	gtt	gct				1536
Trp	Tyr	Thr	His	His	Leu	Phe	Val	Ile	Val	Tyr	Ile	Leu	Leu	Val	Ala				
				500				505						510					
cat	gga	tac	tac	ttg	tat	ctc	acc	aga	gac	tgg	cac	aat	aaa	acg	act				1584
His	Gly	Tyr	Tyr	Leu	Tyr	Leu	Thr	Arg	Asp	Trp	His	Asn	Lys	Thr	Thr				
		515					520					525							
tgg	atg	tat	ttg	gtg	gta	cca	gtg	gtt	cta	tac	gc	tgt	gaa	agg	ttg				1632
Trp	Met	Tyr	Leu	Val	Val	Pro	Val	Val	Leu	Tyr	Ala	Cys	Glu	Arg	Leu				
	530					535					540								
ata	aga	gca	ttc	agg	tcg	agc	atc	aag	gc	gtg	act	att	agg	aaa	gta				1680
Ile	Arg	Ala	Phe	Arg	Ser	Ile	Lys	Ala	Val	Thr	Ile	Arg	Lys	Val					
	545				550				555					560					
gca	gtt	tat	cca	gga	aac	gtg	ctg	gca	att	cac	ttg	tca	agg	cct	caa				1728
Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala	Ile	His	Leu	Ser	Arg	Pro	Gln				
				565				570						575					
aac	ttc	aaa	tac	aag	agt	gg	caa	tac	atg	ttt	gtt	aac	tgt	gct	gct				1776
Asn	Phe	Lys	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Asn	Cys	Ala	Ala				
				580				585					590						
gtt	tct	cca	ttt	gaa	tgg	cat	cca	ttt	tca	atc	aca	tct	gca	cca	caa				1824
Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gln				
		595				600						605							
gat	gat	tac	cta	agt	gtt	cac	att	aga	gtt	ctt	ggg	gat	tgg	aca	cga				1872
Asp	Asp	Tyr	Leu	Ser	Val	His	Ile	Arg	Val	Leu	Gly	Asp	Trp	Thr	Arg				

Sequence Listing

610	gct ctc aaa gga gtc ttc	615	tct gag gtg tgt aag cca cca ccg gca gga	1920
Ala Leu Lys Gly Val Phe	620	Ser Glu Val Cys Lys Pro Pro Pro Ala Gly		
625	gtt agt ggt ctg ctt aga gcc gac atg ttg cat ggt gca aat aat ccc	635	ggt gca aat aat ccc	1968
Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro	640			
645	gac ttc ccg aaa gtc ttg att gat ggt cca tat ggt gca cca gca caa	650	ggt gca cca gca caa	2016
Asp Phe Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln	655			
660	gac tac aag aag tac gag gtg gtt cta cta gtt ggt ctc ggg att gga	665	ggt ctc ggg att gga	2064
Asp Tyr Lys Lys Tyr Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly	670			
675	gcc aca cca atg atc agt atc gtc aaa gac att gtt aat aac atc aag	680	ggt aat aac atc aag	2112
Ala Thr Pro Met Ile Ser Ile Val Lys Asp Ile Val Asn Asn Ile Lys	685			
690	gcc aag gaa caa gcc caa cta aac cga atg gag aat gga aca agc gaa	695	gga aca agc gaa	2160
Ala Lys Glu Gln Ala Gln Leu Asn Arg Met Glu Asn Gly Thr Ser Glu	700			
705	cca caa cga agt aag aaa gag agt ttc agg acc cgt aga gct tac ttc	710	ggt acc cgt aga gct tac ttc	2208
Pro Gln Arg Ser Lys Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe	715			
725	tat tgg gtt acg cgt gag caa ggc tct ttc gat tgg ttc aag aac ata	730	ggt gac gct cgt tcc gca ctt	2256
Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile	735			
740	atg aac gaa gtc gcg gaa cga gat gcc aac cgc gtc atc gaa atg cat	745	ggt gac gct cgt tcc gca ctt	2304
Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His	750			
755	aac tat tgt aca agt gtc tat gaa gaa ggt gac gct cgt tcc gca ctt	760	ggt gac gct cgt tcc gca ctt	2352
Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu	765			
770	ata cat atg ctt caa tca cta aac cat gca aag aac ggc gtc gac att	775	ggt gac gct cgt tcc gca ctt	2400
Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile	780			
785	gtc tct gga aca aga gtt atg tcc cat ttc gct aaa cct aat tgg aga	790	ggt gac gct cgt tcc gca ctt	2448
Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg	795			
805	aat gtt tac aag cgt ata gct atg gat cat cct aac acc aaa gtt gga	810	ggt gac gct cgt tcc gca ctt	2496
Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly	815			
820	gtg ttt tac tgt gga gca cca gca ttg aca aag gag cta agg cat cta	825	ggt gac gct cgt tcc gca ctt	2544
Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu	830			
835	gct tta gat ttc acc cac aaa aca agc acc aga ttc tcc ttc cac aaa	840	ggt gac gct cgt tcc gca ctt	2592
Ala Leu Asp Phe Thr His Lys Thr Ser Thr Arg Phe Ser Phe His Lys	845			
850	gag aat ttc taa	855	ggt gac gct cgt tcc gca ctt	2604
Glu Asn Phe				
865				
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Glu Ala Gly Asn Ser Gly Pro Met Ser Gly Gly Gln Leu Pro Pro Ile				
20 25 30				
Tyr Lys Lys Pro Gly Asn Ser Arg Phe Thr Ala Glu Asn Ser Gln Arg				
35 40 45				
Thr Arg Thr Ala Pro Tyr Val Asp Leu Thr Val Asp Val Gln Asp Asp				
50 55 60				
Thr Val Ser Val His Ser Leu Lys Met Glu Gly Gly Ser Ser Val Glu				

Sequence Listing

65					70					75				80
Glu	Ser	Pro	Glu	Leu	Thr	Leu	Leu	Lys	Arg	Asn	Arg	Leu	Glu	Lys
				85					90					95
Thr	Thr	Val	Val	Lys	Arg	Leu	Ala	Ser	Val	Ser	His	Glu	Leu	Lys
			100					105					110	
Leu	Thr	Ser	Val	Ser	Gly	Gly	Ile	Gly	Gly	Arg	Lys	Pro	Pro	Arg
		115					120					125		Pro
Ala	Lys	Leu	Asp	Arg	Thr	Lys	Ser	Ala	Ala	Ser	Gln	Ala	Leu	Lys
	130					135				140				Gly
Leu	Lys	Phe	Ile	Ser	Lys	Thr	Asp	Gly	Gly	Ala	Gly	Trp	Ser	Ala
145					150					155				160
Glu	Lys	Arg	Phe	Asn	Gln	Ile	Thr	Ala	Thr	Thr	Gly	Gly	Leu	Leu
				165					170					175
Arg	Thr	Lys	Phe	Gly	Glu	Cys	Ile	Gly	Met	Thr	Ser	Lys	Asp	Phe
			180					185					190	Ala
Leu	Glu	Leu	Phe	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile	Thr	Gly
		195					200					205		Glu
Val	Ile	Asp	Gly	Asp	Gln	Leu	Lys	Glu	Phe	Trp	Glu	Gln	Ile	Asn
	210					215					220			Asp
Gln	Ser	Phe	Asp	Ser	Arg	Leu	Lys	Thr	Phe	Phe	Asp	Met	Val	Asp
225					230					235				240
Asp	Ala	Asp	Gly	Arg	Leu	Thr	Glu	Asp	Glu	Val	Arg	Glu	Leu	Glu
				245				250					255	Ser
Leu	Glu	Thr	Leu	Leu	Leu	Gln	Ala	Ala	Thr	Gln	Ser	Val	Ile	Thr
			260				265						270	Ser
Thr	Gly	Glu	Arg	Lys	Asn	Leu	Ser	His	Met	Met	Ser	Gln	Arg	Leu
		275					280					285		Lys
Pro	Thr	Phe	Asn	Arg	Asn	Pro	Leu	Lys	Arg	Trp	Tyr	Arg	Gly	Leu
	290					295					300			Arg
Phe	Phe	Leu	Leu	Asp	Asn	Trp	Gln	Arg	Cys	Trp	Val	Ile	Val	Leu
305					310					315				Trp
Phe	Ile	Val	Met	Ala	Ile	Leu	Phe	Thr	Tyr	Lys	Tyr	Ile	Gln	Tyr
				325					330					Arg
Arg	Ser	Pro	Val	Tyr	Pro	Val	Met	Gly	Asp	Cys	Val	Cys	Met	Ala
			340					345					350	Lys
Gly	Ala	Ala	Glu	Thr	Val	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu
		355					360					365		Pro
Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Arg	Leu
	370					375					380			Gly
Arg	Val	Val	Pro	Phe	Asp	Asn	Leu	Asn	Phe	His	Lys	Val	Ile	Ala
385					390				395					400
Val	Gly	Ile	Ile	Val	Gly	Val	Thr	Met	His	Ala	Gly	Ala	His	Leu
				405					410					Ala
Cys	Asp	Phe	Pro	Arg	Leu	Leu	His	Ala	Thr	Pro	Glu	Ala	Tyr	Arg
			420					425					430	Pro
Leu	Arg	Gln	Phe	Phe	Gly	Asp	Glu	Gln	Pro	Lys	Ser	Tyr	Trp	His
		435					440					445		Phe
Val	Asn	Ser	Val	Glu	Gly	Ile	Thr	Gly	Leu	Val	Met	Val	Leu	Leu
	450					455					460			Met
Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Gly	Lys
465					470					475				Leu
Asn	Tyr	Leu	Pro	Gly	Pro	Leu	Lys	Lys	Leu	Ala	Ser	Phe	Asn	Ala
				485					490					Phe
Trp	Tyr	Thr	His	His	Leu	Phe	Val	Ile	Val	Tyr	Ile	Leu	Leu	Val
			500					505					510	Ala
His	Gly	Tyr	Tyr	Leu	Tyr	Leu	Thr	Arg	Asp	Trp	His	Asn	Lys	Thr
		515					520					525		Thr
Trp	Met	Tyr	Leu	Val	Val	Pro	Val	Val	Leu	Tyr	Ala	Cys	Glu	Arg
	530					535					540			Leu
Ile	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys	Ala	Val	Thr	Ile	Arg	Lys
545					550					555				Val
Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala	Ile	His	Leu	Ser	Arg	Pro
				565					570					Gln
														575

Sequence Listing

Asn Phe Lys Tyr Lys Ser Gly Gln Tyr Met Phe Val Asn Cys Ala Ala
 580 585 590
 Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gln
 595 600 605
 Asp Asp Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Arg
 610 615 620
 Ala Leu Lys Gly Val Phe Ser Glu Val Cys Lys Pro Pro Pro Ala Gly
 625 630 635 640
 Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro
 645 650 655
 Asp Phe Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
 660 665 670
 Asp Tyr Lys Lys Tyr Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly
 675 680 685
 Ala Thr Pro Met Ile Ser Ile Val Lys Asp Ile Val Asn Asn Ile Lys
 690 695 700
 Ala Lys Glu Gln Ala Gln Leu Asn Arg Met Glu Asn Gly Thr Ser Glu
 705 710 715 720
 Pro Gln Arg Ser Lys Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe
 725 730 735
 Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile
 740 745 750
 Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His
 755 760 765
 Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu
 770 775 780
 Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile
 785 790 795 800
 Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg
 805 810 815
 Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly
 820 825 830
 Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu
 835 840 845
 Ala Leu Asp Phe Thr His Lys Thr Ser Thr Arg Phe Ser Phe His Lys
 850 855 860
 Glu Asn Phe
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<210> 21

<211> 2709

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<213> Arabidopsis thaliana

<220>

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<222> (1)..(2706)

<223> coding for NADPH oxidase

<400> 21

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Met Met Asn Arg Ser Glu Met Gln Lys Leu Gly Phe Glu His Val Arg	
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tac tac aca gag tcg ccg tac aac aga gga gag tcc tcg gcg aac gtg	96
Tyr Tyr Thr Glu Ser Pro Tyr Asn Arg Gly Glu Ser Ser Ala Asn Val	
20 25 30	
gcg acg aca agc aac tat tac ggt gaa gat gaa cca tac gtg gag atc	144
Ala Thr Thr Ser Asn Tyr Tyr Gly Glu Asp Glu Pro Tyr Val Glu Ile	
35 40 45	
acg cta gat atc cac gac gat tcc gtc tcc gtg tac ggc ttg aag tca	192
Thr Leu Asp Ile His Asp Asp Ser Val Ser Val Tyr Gly Leu Lys Ser	
50 55 60	
ccg aac cat cga ggg gcc ggg tct aat tat gag gat caa tcg ctt ctc	240
Pro Asn His Arg Gly Ala Gly Ser Asn Tyr Glu Asp Gln Ser Leu Leu	
65 70 75 80	

Sequence Listing

aga	caa	ggt	cgt	tca	ggg	agg	agt	aac	tcg	gta	ttg	aaa	cgc	ttg	gct	288
Arg	Gln	Gly	Arg	Ser	Gly	Arg	Ser	Asn	Ser	Val	Leu	Lys	Arg	Leu	Ala	
				85					90					95		
tct	tct	gtt	tcc	acc	gga	ata	aca	cga	gtt	gct	tct	tct	gtt	tct	tcg	336
Ser	Ser	Val	Ser	Thr	Gly	Ile	Thr	Arg	Val	Ala	Ser	Ser	Val	Ser	Ser	
			100					105					110			
tct	tcc	gcg	aga	aaa	cca	ccg	cgg	ccg	cag	ctg	gct	aag	ctg	cgc	cgt	384
Ser	Ser	Ala	Arg	Lys	Pro	Pro	Arg	Pro	Gln	Leu	Ala	Lys	Leu	Arg	Arg	
		115					120					125				
tcg	aaa	tct	aga	gca	gag	cta	gct	ctc	aaa	ggt	ctt	aaa	ttc	atc	acc	432
Ser	Lys	Ser	Arg	Ala	Glu	Leu	Ala	Leu	Lys	Gly	Leu	Lys	Phe	Ile	Thr	
	130					135					140					
aag	act	gat	ggt	gtc	act	ggt	tgg	cct	gaa	gtt	gag	aaa	cgg	ttt	tat	480
Lys	Thr	Asp	Gly	Val	Thr	Gly	Trp	Pro	Glu	Val	Glu	Lys	Arg	Phe	Tyr	
145				150						155				160		
gtg	atg	aca	atg	act	aat	aac	gga	tta	tta	cac	cga	tcc	aga	ttc	ggt	528
Val	Met	Thr	Met	Thr	Asn	Asn	Gly	Leu	Leu	His	Arg	Ser	Arg	Phe	Gly	
				165				170						175		
gaa	tgt	ata	ggg	atg	aaa	tcg	acg	gag	ttt	gcg	ttg	gca	ttg	ttc	gat	576
Glu	Cys	Ile	Gly	Met	Lys	Ser	Thr	Glu	Phe	Ala	Leu	Ala	Leu	Phe	Asp	
			180					185					190			
gct	tta	gcg	agg	agg	gaa	aac	gta	agc	gga	gat	tca	ata	aac	atg	aat	624
Ala	Leu	Ala	Arg	Arg	Glu	Asn	Val	Ser	Gly	Asp	Ser	Ile	Asn	Met	Asn	
		195					200					205				
gag	ctt	aaa	gag	ttc	tgg	aag	cag	atc	act	gat	caa	gat	ttt	gat	tca	672
Glu	Leu	Lys	Glu	Phe	Trp	Lys	Gln	Ile	Thr	Asp	Gln	Asp	Phe	Asp	Ser	
	210					215					220					
agg	cta	cga	act	ttc	ttc	gcc	atg	gtc	gat	aag	gat	tcg	gat	ggg	cgg	720
Arg	Leu	Arg	Thr	Phe	Phe	Ala	Met	Val	Asp	Lys	Asp	Ser	Asp	Gly	Arg	
225				230						235				240		
ttg	aat	gaa	gcc	gaa	gta	aga	gag	att	ata	act	tta	agt	gct	tct	gca	768
Leu	Asn	Glu	Ala	Glu	Val	Arg	Glu	Ile	Ile	Thr	Leu	Ser	Ala	Ser	Ala	
			245					250						255		
aac	gag	ttg	gat	aac	att	cgg	aga	caa	gct	gat	gaa	tat	gct	gct	ttg	816
Asn	Glu	Leu	Asp	Asn	Ile	Arg	Arg	Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Leu	
			260					265					270			
att	atg	gaa	gaa	ctc	gat	cct	tat	cat	tat	gga	tac	atc	atg	ata	gag	864
Ile	Met	Glu	Glu	Leu	Asp	Pro	Tyr	His	Tyr	Gly	Tyr	Ile	Met	Ile	Glu	
		275					280					285				
aat	ctc	gag	ata	ctt	cta	ttg	caa	gcg	ccg	atg	cag	gat	gtg	aga	gat	912
Asn	Leu	Glu	Ile	Leu	Leu	Leu	Gln	Ala	Pro	Met	Gln	Asp	Val	Arg	Asp	
	290					295					300					
gga	gag	agt	aag	aag	cta	agc	aag	atg	cta	agt	cag	aat	ctc	atg	gtt	960
Gly	Glu	Ser	Lys	Lys	Leu	Ser	Lys	Met	Leu	Ser	Gln	Asn	Leu	Met	Val	
305					310					315				320		
ccg	cag	agt	agg	aat	ctc	ggg	gca	cgt	ttt	tgc	aga	ggg	atg	aag	tat	1008
Pro	Gln	Ser	Arg	Asn	Leu	Gly	Ala	Arg	Phe	Cys	Arg	Gly	Met	Lys	Tyr	
				325					330					335		
ttt	ttg	ttt	gat	aat	tgg	aag	aga	gtg	tgg	gtg	atg	gct	cta	tgg	ata	1056
Phe	Leu	Phe	Asp	Asn	Trp	Lys	Arg	Val	Trp	Val	Met	Ala	Leu	Trp	Ile	
			340					345					350			
ggt	gct	atg	gcg	ggt	ttg	ttc	acg	tgg	aag	ttt	atg	gag	tat	cga	aaa	1104
Gly	Ala	Met	Ala	Gly	Leu	Phe	Thr	Trp	Lys	Phe	Met	Glu	Tyr	Arg	Lys	
		355					360					365				
aga	tcc	gct	tac	gaa	gtc	atg	gga	gtt	tgt	gtt	tgt	ata	gct	aaa	gga	1152
Arg	Ser	Ala	Tyr	Glu	Val	Met	Gly	Val	Cys	Val	Cys	Ile	Ala	Lys	Gly	
		370				375					380					
gct	gca	gag	acg	ctt	aaa	cta	aac	atg	gct	atg	att	ttg	tta	cca	gtt	1200
Ala	Ala	Glu	Thr	Leu	Lys	Leu	Asn	Met	Ala	Met	Ile	Leu	Leu	Pro	Val	
385					390					395					400	
tgt	agg	aac	acc	atc	act	tgg	ctg	cgg	acc	aaa	acc	aag	tta	agt	gct	1248
Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Thr	Lys	Thr	Lys	Leu	Ser	Ala	
				405					410					415		

Sequence Listing

att gtt cct ttc gat gac agc ctc aat ttt cac aag gtc ata gct ata	1296
Ile Val Pro Phe 420 Asp Asp Ser Leu Asn Phe His Lys Val 430 Ile Ala Ile	
gga att tca gtt gga gtt gga atc cat gct aca tct cac tta gca tgt	1344
Gly Ile Ser Val Gly Val Gly Ile His Ala Thr Ser His Leu Ala Cys	
435 440 445	
gat ttc ccc cga ctg ata gct gca gac gaa gat cag tat gag cca atg	1392
Asp Phe 450 Pro Arg Leu Ile Ala 455 Asp Glu Asp 460 Tyr Glu Pro Met	
gag aag tat ttt ggg cca cag aca aag aga tat ttg gac ttt gtt caa	1440
Glu Lys Tyr Phe Gly Pro Gln Thr Lys Arg Tyr Leu Asp Phe Val Gln	
465 470 475 480	
tcg gta gaa gga gtt acc ggg att gga atg gtt gta cta atg acc ata	1488
Ser Val Glu Gly Val Thr Gly Ile Gly Met Val Val Leu Met Thr Ile	
485 490 495	
gcc ttt aca ttg gct aca aca tgg ttc aga cgt aat aag ctc aac ctt	1536
Ala Phe Thr Leu Ala Thr Thr Trp Phe 505 Arg Arg Asn Lys Leu Asn Leu	
500 510	
cct gga cca ctg aag aaa ata aca ggc ttc aat gcc ttc tgg tac tct	1584
Pro Gly Pro Leu Lys Lys Ile Thr 520 Gly Phe Asn Ala Phe 525 Trp Tyr Ser	
cac cac tta ttt gtt atc gtc tac tcg ctt ctt gtc gtt cat gga ttc	1632
His His Leu Phe Val Ile Val Tyr Ser Leu Leu Val Val His Gly Phe	
530 535 540	
tac gta tac ctc atc atc gag cca tgg tac aag aaa acg aca tgg atg	1680
Tyr Val Tyr Leu Ile Ile 550 Glu Pro Trp Tyr Lys 555 Thr Thr Trp Met	
545 560	
tat ttg atg gta ccg gtg gtt ctt tac ttg tgt gaa agg ctg att cgt	1728
Tyr Leu Met Val Pro Val Val Leu Tyr Leu Cys Glu Arg Leu Ile Arg	
565 570 575	
gca ttc agg tca agc gtc gag gct gtt tca gtg cta aag gtt gct gtg	1776
Ala Phe Arg Ser 580 Ser Val Glu Ala Val 585 Ser Val Leu Lys 590 Val Ala Val	
tta cca ggg aat gtc ttg tcg ctt cac ttg tca aga cca agc aac ttc	1824
Leu Pro Gly Asn Val Leu Ser Leu His Leu Ser Arg Pro Ser Asn Phe	
595 600 605	
aga tac aag agt gga caa tac atg tat ctc aac tgt tct gca gtt tct	1872
Arg Tyr 610 Lys Ser Gly Gln Tyr Met Tyr Leu Asn Cys 620 Ser Ala Val Ser	
aca tta gaa tgg cat cca ttc tca att acc tca gct cca gga gat gac	1920
Thr Leu Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp	
625 630 635 640	
tac ctc agt gtc cac atc agg gtt tta gga gac tgg act aag caa tta	1968
Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Lys Gln Leu	
645 650 655	
aga tca tta ttc tct gag gtg tgc aag cca cgc cct cct gat gaa cac	2016
Arg Ser Leu Phe Ser Glu Val Cys Lys Pro Arg Pro Pro Asp Glu His	
660 665 670	
aga ctg aac aga gcc gac tcg aag cac tgg gat tac atc cct gac ttt	2064
Arg Leu Asn Arg Ala Asp Ser Lys His Trp Asp Tyr Ile Pro Asp Phe	
675 680 685	
cca aga atc cta att gat ggt cca tat gga gca cca gca caa gac tac	2112
Pro Arg Ile Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr	
690 695 700	
aag aag ttt gaa gtt gtt ctg cta gtg ggt cta gga atc ggt gcc act	2160
Lys Lys Phe Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr	
705 710 715 720	
ccg atg atc agc ata gtg agt gac ata atc aat aac ttg aaa ggc gtg	2208
Pro Met Ile Ser Ile Val Ser Asp Ile Ile Asn Asn Leu Lys Gly Val	
725 730 735	
gaa gaa ggc agt aac cga aga cag tca ccg atc cat aat atg gtc aca	2256
Glu Glu Gly Ser 740 Asn Arg Arg Gln Ser 745 Pro Ile His Asn Met 750 Val Thr	

Sequence Listing

cct	cct	gtt	tct	cca	tca	aga	aaa	agt	gag	acg	ttc	aga	acc	aag	aga	2304
Pro	Pro	Val	Ser	Pro	Ser	Arg	Lys	Ser	Glu	Thr	Phe	Arg	Thr	Lys	Arg	
		755					760					765				
gct	tac	ttc	tac	tgg	gtc	aca	aga	gag	cag	ggg	tcg	ttt	gac	tgg	ttc	2352
Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln	Gly	Ser	Phe	Asp	Trp	Phe	
		770					775					780				
aag	aac	gtg	atg	gac	gaa	gtg	act	gaa	aca	gac	cgc	aaa	aac	gta	att	2400
Lys	Asn	Val	Met	Asp	Glu	Val	Thr	Glu	Thr	Asp	Arg	Lys	Asn	Val	Ile	
		785				790					795				800	
gag	ctg	cat	aat	tac	tgc	acc	agc	gtt	tac	gag	gaa	ggg	gac	gcg	agg	2448
Glu	Leu	His	Asn	Tyr	Cys	Thr	Ser	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg	
				805					810					815		
tct	gca	ctt	atc	acg	atg	ctc	cag	tct	cta	aac	cat	gct	aag	cat	gga	2496
Ser	Ala	Leu	Ile	Thr	Met	Leu	Gln	Ser	Leu	Asn	His	Ala	Lys	His	Gly	
			820					825					830			
gtg	gac	gtt	gtg	tca	gga	aca	cgt	gtc	atg	tcc	cat	ttc	gct	agg	cca	2544
Val	Asp	Val	Val	Ser	Gly	Thr	Arg	Val	Met	Ser	His	Phe	Ala	Arg	Pro	
			835				840					845				
aac	tgg	aga	agc	gtt	ttc	aaa	agg	atc	gct	gtg	aat	cat	cct	aag	act	2592
Asn	Trp	Arg	Ser	Val	Phe	Lys	Arg	Ile	Ala	Val	Asn	His	Pro	Lys	Thr	
		850				855					860					
aga	gtc	gga	gtg	ttt	tat	tgt	gga	gca	gct	ggg	tta	gtg	aaa	gag	tta	2640
Arg	Val	Gly	Val	Phe	Tyr	Cys	Gly	Ala	Ala	Gly	Leu	Val	Lys	Glu	Leu	
					870					875					880	
cga	cac	tta	tca	ctg	gat	ttc	tct	cat	aag	acc	tcc	acc	aag	ttc	atc	2688
Arg	His	Leu	Ser	Leu	Asp	Phe	Ser	His	Lys	Thr	Ser	Thr	Lys	Phe	Ile	
				885					890					895		
ttc	cat	aaa	gag	aat	ttc	taa										2709
Phe	His	Lys	Glu	Asn	Phe											
			900													

<210> 22

<211> 902

<212> PRT

<213> Arabidopsis thaliana

<400> 22

Met	Met	Asn	Arg	Ser	Glu	Met	Gln	Lys	Leu	Gly	Phe	Glu	His	Val	Arg	
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Tyr	Tyr	Thr	Glu	Ser	Pro	Tyr	Asn	Arg	Gly	Glu	Ser	Ser	Ala	Asn	Val	
			20					25					30			
Ala	Thr	Thr	Ser	Asn	Tyr	Tyr	Gly	Glu	Asp	Glu	Pro	Tyr	Val	Glu	Ile	
			35				40					45				
Thr	Leu	Asp	Ile	His	Asp	Asp	Ser	Val	Ser	Val	Tyr	Gly	Leu	Lys	Ser	
	50					55					60					
Pro	Asn	His	Arg	Gly	Ala	Gly	Ser	Asn	Tyr	Glu	Asp	Gln	Ser	Leu	Leu	
	65				70					75					80	
Arg	Gln	Gly	Arg	Ser	Gly	Arg	Ser	Asn	Ser	Val	Leu	Lys	Arg	Leu	Ala	
				85					90					95		
Ser	Ser	Val	Ser	Thr	Gly	Ile	Thr	Arg	Val	Ala	Ser	Ser	Val	Ser	Ser	
			100					105					110			
Ser	Ser	Ala	Arg	Lys	Pro	Pro	Arg	Pro	Gln	Leu	Ala	Lys	Leu	Arg	Arg	
		115					120					125				
Ser	Lys	Ser	Arg	Ala	Glu	Leu	Ala	Leu	Lys	Gly	Leu	Lys	Phe	Ile	Thr	
	130					135					140					
Lys	Thr	Asp	Gly	Val	Thr	Gly	Trp	Pro	Glu	Val	Glu	Lys	Arg	Phe	Tyr	
	145				150					155					160	
Val	Met	Thr	Met	Thr	Asn	Asn	Gly	Leu	Leu	His	Arg	Ser	Arg	Phe	Gly	
				165					170					175		
Glu	Cys	Ile	Gly	Met	Lys	Ser	Thr	Glu	Phe	Ala	Leu	Ala	Leu	Phe	Asp	
			180					185					190			
Ala	Leu	Ala	Arg	Arg	Glu	Asn	Val	Ser	Gly	Asp	Ser	Ile	Asn	Met	Asn	
		195					200					205				
Glu	Leu	Lys	Glu	Phe	Trp	Lys	Gln	Ile	Thr	Asp	Gln	Asp	Phe	Asp	Ser	
	210					215					220					

Sequence Listing

Arg 225	Leu	Arg	Thr	Phe	Phe 230	Ala	Met	Val	Asp	Lys 235	Asp	Ser	Asp	Gly	Arg 240
Leu	Asn	Glu	Ala	Glu 245	Val	Arg	Glu	Ile	Ile 250	Thr	Leu	Ser	Ala	Ser 255	Ala
Asn	Glu	Leu	Asp 260	Asn	Ile	Arg	Arg	Gln 265	Ala	Asp	Glu	Tyr	Ala 270	Ala	Leu
Ile	Met	Glu 275	Glu	Leu	Asp	Pro	Tyr 280	His	Tyr	Gly	Tyr	Ile 285	Met	Ile	Glu
Asn	Leu 290	Glu	Ile	Leu	Leu	Leu 295	Gln	Ala	Pro	Met	Gln 300	Asp	Val	Arg	Asp
Gly 305	Glu	Ser	Lys	Lys	Leu 310	Ser	Lys	Met	Leu	Ser 315	Gln	Asn	Leu	Met	Val 320
Pro	Gln	Ser	Arg	Asn 325	Leu	Gly	Ala	Arg	Phe 330	Cys	Arg	Gly	Met	Lys 335	Tyr
Phe	Leu	Phe	Asp 340	Asn	Trp	Lys	Arg	Val 345	Trp	Val	Met	Ala	Leu 350	Trp	Ile
Gly	Ala	Met 355	Ala	Gly	Leu	Phe	Thr 360	Trp	Lys	Phe	Met	Glu 365	Tyr	Arg	Lys
Arg	Ser 370	Ala	Tyr	Glu	Val	Met 375	Gly	Val	Cys	Val	Cys 380	Ile	Ala	Lys	Gly
Ala 385	Ala	Glu	Thr	Leu	Lys 390	Leu	Asn	Met	Ala	Met 395	Ile	Leu	Leu	Pro	Val 400
Cys	Arg	Asn	Thr 405	Ile	Thr	Trp	Leu	Arg	Thr 410	Lys	Thr	Lys	Leu	Ser	Ala 415
Ile	Val	Pro	Phe 420	Asp	Asp	Ser	Leu	Asn 425	Phe	His	Lys	Val	Ile 430	Ala	Ile
Gly	Ile	Ser 435	Val	Gly	Val	Gly	Ile 440	His	Ala	Thr	Ser	His 445	Leu	Ala	Cys
Asp	Phe 450	Pro	Arg	Leu	Ile	Ala 455	Ala	Asp	Glu	Asp	Gln 460	Tyr	Glu	Pro	Met
Glu 465	Lys	Tyr	Phe	Gly	Pro 470	Gln	Thr	Lys	Arg	Tyr 475	Leu	Asp	Phe	Val	Gln 480
Ser	Val	Glu	Gly	Val 485	Thr	Gly	Ile	Gly	Met 490	Val	Val	Leu	Met	Thr 495	Ile
Ala	Phe	Thr	Leu 500	Ala	Thr	Thr	Trp	Phe 505	Arg	Arg	Asn	Lys	Leu 510	Asn	Leu
Pro	Gly	Pro 515	Leu	Lys	Lys	Ile	Thr 520	Gly	Phe	Asn	Ala	Phe 525	Trp	Tyr	Ser
His	His 530	Leu	Phe	Val	Ile	Val 535	Tyr	Ser	Leu	Leu	Val 540	Val	His	Gly	Phe
Tyr 545	Val	Tyr	Leu	Ile	Ile 550	Glu	Pro	Trp	Tyr	Lys 555	Lys	Thr	Thr	Trp	Met 560
Tyr	Leu	Met	Val	Pro 565	Val	Val	Leu	Tyr	Leu 570	Cys	Glu	Arg	Leu	Ile 575	Arg
Ala	Phe	Arg	Ser 580	Ser	Val	Glu	Ala	Val 585	Ser	Val	Leu	Lys	Val 590	Ala	Val
Leu	Pro	Gly 595	Asn	Val	Leu	Ser	Leu 600	His	Leu	Ser	Arg	Pro	Ser	Asn	Phe
Arg	Tyr 610	Lys	Ser	Gly	Gln	Tyr 615	Met	Tyr	Leu	Asn	Cys 620	Ser	Ala	Val	Ser
Thr 625	Leu	Glu	Trp	His	Pro 630	Phe	Ser	Ile	Thr	Ser 635	Ala	Pro	Gly	Asp	Asp 640
Tyr	Leu	Ser	Val	His 645	Ile	Arg	Val	Leu	Gly 650	Asp	Trp	Thr	Lys	Gln 655	Leu
Arg	Ser	Leu	Phe 660	Ser	Glu	Val	Cys	Lys 665	Pro	Arg	Pro	Pro	Asp 670	Glu	His
Arg	Leu	Asn 675	Arg	Ala	Asp	Ser	Lys 680	His	Trp	Asp	Tyr	Ile 685	Pro	Asp	Phe
Pro	Arg 690	Ile	Leu	Ile	Asp	Gly 695	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr
Lys 705	Lys	Phe	Glu	Val	Val 710	Leu	Leu	Val	Gly	Leu 715	Gly	Ile	Gly	Ala	Thr 720
Pro	Met	Ile	Ser	Ile	Val	Ser	Asp	Ile	Ile	Asn	Asn	Leu	Lys	Gly	Val

Sequence Listing

Glu	Glu	Gly	Ser	725	Asn	Arg	Arg	Gln	Ser	730	Pro	Ile	His	Asn	Met	735	Val	Thr
Pro	Pro	Val	Ser	740	Pro	Ser	Arg	Lys	Ser	745	Glu	Thr	Phe	Arg	Thr	Lys	Arg	
Ala	Tyr	Phe	Tyr	755	Trp	Val	Thr	Arg	Glu	760	Gln	Gly	Ser	Phe	Asp	Trp	Phe	
Lys	Asn	Val	Met	770	Asp	Glu	Val	Thr	Glu	775	Thr	Asp	Arg	Lys	Asn	Val	Ile	
785	Glu	Leu	His	Asn	790	Tyr	Cys	Thr	Ser	795	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg
	Ser	Ala	Leu	805	Ile	Thr	Met	Leu	Gln	810	Ser	Leu	Asn	His	Ala	Lys	815	His
	Val	Asp	Val	820	Val	Ser	Gly	Thr	Arg	825	Val	Met	Ser	His	Phe	Ala	Arg	Pro
	Asn	Trp	Arg	835	Ser	Val	Phe	Lys	Arg	840	Ile	Ala	Val	Asn	His	Pro	Lys	Thr
	Arg	Val	Gly	850	Val	Phe	Tyr	Cys	Gly	855	Ala	Ala	Gly	Leu	Val	Lys	Glu	Leu
865	Arg	His	Leu	870	Ser	Leu	Asp	Phe	Ser	875	His	Lys	Thr	Ser	Thr	Lys	Phe	880
				885						890							Ile	
	Phe	His	Lys	900	Glu	Asn	Phe											

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 <212> DNA
 <213> Artificial sequence
 <220>
 <223> Description of the artificial sequence:
 oligonucleotide primer
 <400> 23
 garcaaggct cttttgattg

20

<210> 24
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 <212> DNA
 <213> Artificial sequence
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 <223> Description of the artificial sequence:
 oligonucleotide primer
 <400> 24
 gaaatgctcc ttatggaatt c

21